

# DUN'S REVIEW

and Modern Industry

A DUN & BRADSTREET PUBLICATION

SEPTEMBER 1956 75c



SPECIAL EMPHASIS FEATURE:

**MATERIALS: TIME FOR A CHANGE?**

COVER: PAGE 5



In business communications

## DICTABELT SUPPLIES THE MISSING LINK



Communications? That's a long word for the apparently simple problem of "getting your ideas across to the right people."

But—today's executive often finds his toughest challenge is just this: how to reach all the necessary people with the ideas that are his stock in trade.

Dictaphone's exclusive DICTABELT record was tailored to this need—to supply a simple, fast, efficient link between minds. To speed letters, memos, reports, directions, ideas on their way, you just pick up the mike of the TIME-MASTER dictating machine and think out loud. Instantly, the work's off your mind—and onto the crystal-clear, unbreakable DICTABELT record.

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*The Dictaphone TIME-MASTER dictating machine "Takes the words right out of your mind."*

# DICTAPHONE CORPORATION

In Canada, write Dictaphone Corporation, Ltd., 204 Eglinton Ave. East, Toronto. . . . In England, Dictaphone Company, Ltd., 17-19 Stratford Place, London W.1. Dictaphone, Time Master and Dictabelt are registered trade-marks of Dictaphone Corporation.



# "Output per operator increased about 10%"

reports the Superintendent of a Denver work clothes plant,  
in describing the benefits of their

"MUSIC-WHILE-YOU-WORK" by *Muzak*\*

IMAGINE getting 10% more production from the same number of machines, the same operators, and the same floor space as you now have. And not through any stricter rules that might lower employee morale, but through the addition of a highly popular facility that lifts morale.

These are the impressive results reported by the Bayly Manufacturing Co. of Denver, makers of Bayly Overalls, after a careful study of the output per operator before and after the installation of MUZAK—the world's only scientifically planned and custom-created work music.

#### How MUZAK Paid for Itself Many Times Over

Mr. K. C. Hause, Bayly plant superintendent, described his experience in a recent letter to our MUZAK franchiser in Denver. His letter is so interesting that we are reprinting it here:

Electronic Network, Inc., 1426 Market St.,  
Denver 2, Colorado  
Gentlemen:

Since we are celebrating our tenth anniversary of "Music by Muzak," a bouquet to your Company seems to be in order.

When we first went into the use of music, we tried purchasing our own records, using our own amplifier. This was not too satis-

factory. It required a girl to monitor all programs to take care of the change in volume from one recording to another. We also received some complaints that our programming was repetitious. We found it almost impossible to locate a sufficient stock of records suitable for reproduction over our factory noise.

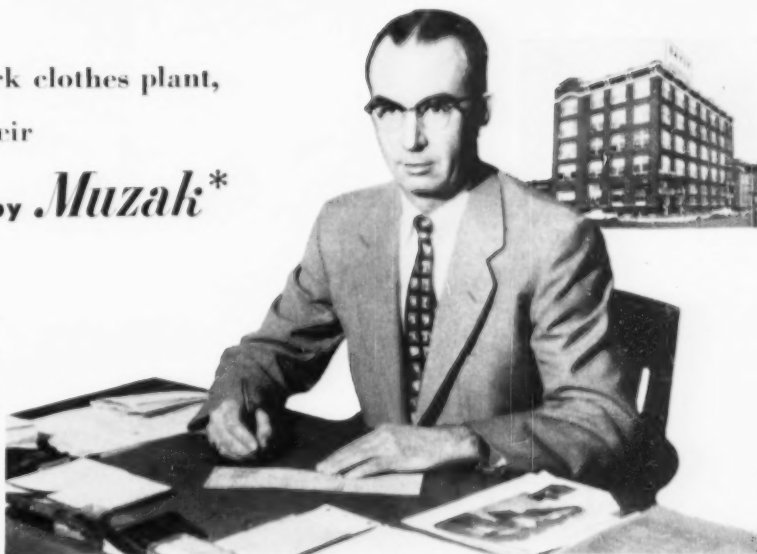
With the installation of Muzak, we eliminated the girl who monitored the programs; this more than covered the cost of our Muzak service. Our operators are well pleased with the selections we have received; it would be impossible to obtain this variety of selections without your service.

By running a study of output per operator over a four-month period before we had Muzak, and a four-month period after we had it, we found that our output per operator increased about 10%. Since our operators are all on piecework, this represented a 10% increase in their wages. There is also a definite morale factor involved. We discovered it the two different times we have had to close down our Muzak system due to moves within the plant. During both of these periods, grievances and petty arguments rose to an all-time high. With the Muzak operating again, they dramatically fell to practically zero.

We are not going to take any chances without Muzak!

Yours very truly,

BAYLY MANUFACTURING CO.  
K. C. HAUSE



MR. K. C. HAUSE, Plant Superintendent, Bayly Manufacturing Co.

This experience is typical. Today upwards of 20,000 progressively managed companies (including 11 of the 12 best known) use music while you work by MUZAK. They are using it to increase production, aid concentration, cut down errors; lessen fatigue, daydreaming, boredom, idle conversation; cut absenteeism and turnover; make employee and customer alike feel friendlier, more cheerful.

#### How MUZAK Differs from Ordinary Music

How can "just music" accomplish such striking results? The answer is that MUZAK is not "just music." It is the only music in the world scientifically planned and produced to help people feel better and work better, without distracting them. To accomplish this, MUZAK has four exclusive "built-in" features:

#### IT IS A SPECIAL KIND OF MUSIC

Every selection in MUZAK's 10 million-dollar library has been especially arranged, orchestrated and recorded for MUZAK's own use. These orchestrations avoid all brassy, blaring effects; any disconcerting musical tricks. MUZAK has the only such collection of specially recorded non-distracting background music available anywhere.

**IT IS SCIENTIFICALLY PROGRAMMED**—based upon time of day, place, and type of employee activity. There is a different program for office workers, for factory workers, for customers in hotels, restaurants, banks, and other public places. Each program is in accordance with the psychological and physiological effects of music on people, as determined by 20 years of on the job experience, plus scientific studies.

**IT IS HIGH FIDELITY—LOW VOLUME**—MUZAK pioneered in high fidelity in order to develop the type of music that could "cut through" noise in busy places—yet remain background music, not distracting loud.

**IT IS TRANSMITTED AUTOMATICALLY** from MUZAK studios located in all principal cities. No need to assign personnel to take care of it, to purchase and store records or tapes, to determine schedules, to service or maintain equipment. A flick of a switch brings you MUZAK.

#### Would You Like to Try MUZAK for 60 Days?

In most sections of the U.S. and Canada, a 60-day trial installation in your office or plant may be arranged. And MUZAK experts will be glad to advise you on including MUZAK in the blueprints of your new building. If you would like more information on what MUZAK can do for your business, simply mail the coupon below.



**NOISE FATIGUE** is a real problem in a busy workroom like this one at the Bayly plant. High fidelity, low volume MUZAK cuts through the noise of machines, masking out unwanted sounds with pleasant, non-distracting background music that soothes nerves, lessens fatigue, aids concentration.

#### MUZAK Means So Much... to So Many Different Types of Business

**OFFICES** note fewer clerical errors, less non-essential conversation, more pep and cheerfulness among employees after MUZAK is installed. One power company provides MUZAK for 700 employees, reports: "Management has benefited from high morale resulting in greater efficiency, and a minimum of errors, absenteeism, and turnover."

**BANKS** find it pays to provide MUZAK for customers and employees both. "Employees feel it is most helpful in the routine of their daily work," writes a Kentucky bank official. "Also many favorable comments from our customers."



\*MUZAK—Reg. U.S. Pat. Off.

**HOTELS AND RESTAURANTS** were among first businesses to discover the value of MUZAK. Says a New York restaurateur: "To me, MUZAK has as much to do with the success of a good restaurant as the food. It provides a pleasant, relaxed atmosphere... resulting in more profits."

**STORES AND SHOPS** report that MUZAK makes clerks feel and act more pleasant, encourages customers to linger longer and buy more. Reports an Oklahoma City food store owner: "We find the planned music service by MUZAK keeps employees' morale high and increases customer buying."

MUZAK CORPORATION, Dept. 59  
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Please send me, without obligation, full information on what MUZAK can do for my business.

NAME..... POSITION.....

COMPANY.....

TYPE OF BUSINESS..... NO. OF EMPLOYEES.....

STREET.....

CITY & ZONE..... STATE.....





E. D. WEARE  
Manager  
Skellyfuel Sales

**"I hopped a plane at midnight...to answer a call for help!"**

*"This true story is typical of the expert know-how you may expect from the Skellyfuel people..."*

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"Within an hour, the trouble was found to be caused by improperly installed controls. With the assistance of the plant superintendent, the necessary changes were made. With the trouble corrected, the plant quickly resumed proper operation."

Even though you may never have had an LP-Gas problem like this, it's good to know that you can call on the expert LP-Gas Skellyfuel specialists. With Skellyfuel, LP-Gas and gas systems are not just a sideline. We've specialized in it—pioneered it, in fact—for over 25 years.

No other company gives you a more complete service than Skelly Oil Company. Our integrated services include: (1) analyzing your needs; (2) designing and constructing your fuel system; and (3) supplying the highest quality LP-Gas available.

For a more complete story of Skellyfuel and how Skellyfuel's integrated services may assist you, phone us today or write for our 20-page color booklet.



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Industrial Division

605 West 47th Street • Kansas City 41, Missouri

## DUN'S REVIEW and Modern Industry

READING  
AND  
ROUTING  
MEMORANDA



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President, The Prudential Life Insurance Company of America

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Subscription: \$5 a year in U.S.A. and Possessions, and Canada. Elsewhere \$10. Single copy, 75 cents. Please state title and employing company when subscribing.

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This magazine is indexed in the Industrial Arts Index, in the Public Affairs Information Service, and also semi-annually in an index available upon request to the publishers. . . . Member ABC, BPA, NBP, SBME, and MPA . . . . . Printed in U.S.A.



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*The Cover*

An aerial view of St. Louis, Missouri, ninth largest industrial market in the United States. According to the new census, the city's pace of market growth was slightly above the national average.

COLOR TRANSPARENCY BY LOCKWOOD, KESSLER AND BARTLETT.

Published monthly by Dun & Bradstreet Publications Corporation. Editorial, advertising, and subscription office: 99 Church Street, New York 8, N.Y., Digby 9-3300. Publication office: 300 W. Adams Street, Chicago, Ill. Address all correspondence to New York offices.

THE DUN & BRADSTREET organization serves American business in the promotion and protection of trade through its varied services supplying information on business enterprises here and abroad, marketing and survey services, Municipal Service Department, the monthly publication of *International Markets* and *Dun's Statistical Review*, and other fact-finding and reporting activities.



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Other products: A.W. ALGRIP Abrasive Rolled Steel Floor Plate—Plates—Sheets—Strip—(Alloy and Special Grades)

For plants where oil, water and grease raise special problems of slipping accidents, we suggest a check on the special qualities of A.W. ALGRIP . . . the world's only abrasive rolled steel flooring.





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Result: less down time, more production time—more tons of material crushed—more profit. Only Allis-Chalmers offers this exclusive advantage. These crushers are a part of a complete line of processing machinery for the rock products, cement and ore processing industries. Allis-Chalmers, Industrial Equipment Division, Milwaukee 1, Wisconsin.

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# ALLIS-CHALMERS



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*His 40 years of covering Capitol news have earned Paul Wooton the unofficial title of "Mr. Business Press." His September report features a study of the farm philosophy of Ezra Taft Benson.*

"A SUBSIDIZED farm economy demoralizes farming. Price supports are justified only as a hedge against disaster."

Those two sentences sum up the philosophy of Ezra Taft Benson, the secretary of agriculture, as it applies to the farm problem. They are



WIDE WORLD  
EZRA TAFT BENSON

said to be derived from a basic doctrine of the Mormon church that the Lord helps those who help themselves. "Farmers cannot rely indefinitely," he says, "on a government cushion."

His objective has been to supply a type of leadership which will stimulate self-reliance and confidence among farmers.

Secretary Benson, an apostle of self-reliance, has had to confront the trend of the day for the Government to do more and more for farmers for political reasons. "Agriculture," he says, "must not be sacrificed on the political auction block." He has advocated policies which he believes are good for the farmer and for the nation. He decries interest in the applause meter, but wants agriculture to stand on its own feet and to strive for individual freedom. This, he believes, plays a fundamental part in the attainment of prosperity among farmers. He warns against white rabbits pulled out of hats, nostrums,

and panaceas. He wants programs that are economically sound, the Government co-operating, not dictating. Farm income now has a bulwark, he says, in a flourishing national economy.

Benson believes that agriculture must be competitive in price, quality, and promotion. "We must adjust our prices to the markets," he says, "if we are going to get our share of them. We do not want to break world markets and we do not intend to do any dumping."

In his testimony before committees of Congress, Secretary Benson has been careful to point out that he believes government aid for farmers should be withdrawn gradually. Eventually it would be extended only in times of emergency. He has no doubt that farmers can be made self-sufficient by improving marketing and distribution, by eliminating waste, by increasing consumption, and by promoting industrial uses of agricultural products. Farmers, he is convinced, are entitled to a program which will preserve a just relationship between what the farmer gets for crops and what he pays for the things he buys.

#### Farm Family Growth

While deploring large corporate farming, Benson is firm in his belief that the family farm, the "backbone of our agriculture and of America," must be large enough to operate economically. For the small farmer he advocates a federal-state-local program that would help him expand his production or help him find a job in business or industry that would give him more income.

Benson's study of socialistic ap-

proaches to farm problems in Europe convinces him that those policies should be shunned like poison. With all of its weaknesses, he says, our free enterprise system has accomplished in terms of human welfare what no other economic or social system ever has approached.

#### Washington Notes

Inflation looms as the world's greatest problem. At least central banking authorities in this hemisphere and in the free world countries so regard it. Business here and abroad seems to have taken little note of the communist threat or friction with the Arab world. Expansion has gone on unabated. Plant capacity continues to be increased. Use of credit continues to mount. More caution is being shown in the United States, but even here, it is pointed out at the Federal Reserve, increases in interest rates seem to have done little to check expansion. It is felt that the auto industry is gambling with the prospect of heavy sales of new models. Serious difficulties will result if the market has been misjudged. It may have been narrowed by higher prices.

Similar situations exist in many other industries. Federal Reserve authorities hope business executives will recognize that they must continue to face up to the menace of overexpansion.

Observers in Washington, as of this writing, are predicting roaring year-end and Christmas sales well above any previous record.

A wave of consumer buying in the last quarter is expected by Fed-

## FACTS

about "THE CHALLENGER"  
BIG JOE and IBH\*

THE CHALLENGER is a ruggedly built, electrically operated hydraulic 1000 lb. lift truck.

It is built by BIG JOE Manufacturing Co., manufacturer of a complete line of over 40 IBH\* lift trucks. Although guaranteed the finest quality materials and workmanship money can buy, it is the only battery operated lift truck priced under \$400.



#### THE CHALLENGER

is an ideal IBH\* tool — In Between Handling — the short distance hydraulic manipulation of materials too heavy for manual handling yet not requiring high priced power-driven equipment.

Only BIG JOE lift trucks carry the "IBH" label—because BIG JOE originated and have continuously built the complete line of all "In Between Handling" equipment. Any one man can operate THE CHALLENGER — it is easy to push — effortless to raise, lower and spot loads.

It is ideally suited for FLEET OPERATION in large plants and for the entire materials handling job in small plants.

A single CHALLENGER in each department pays for itself quickly by just being available when needed.

#### CHECK THESE ADVANTAGES

- Complete Bearing Control Throughout
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- Throttle Valve Control Assures Smooth Accurate Stops

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EVERY DEPARTMENT



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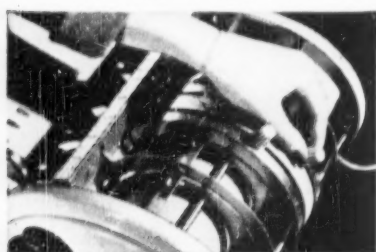


## One girl can do all your folding!

With a handy little Pitney-Bowes Folding Machine, one girl can do all your office folding quicker than a whole group of girls can hand-fold. Think of it, next time you see a tedious folding job being done, and order a Model FH. The time it will save is money in your pocket!

The FH is small, light, can be moved around easily, and can handle many kinds of folding jobs. Anybody can easily operate it—and it costs less than a typewriter!

Electrically driven, with semi-automatic feed, it can double-fold 8½ by 11 inch sheets at speeds up to 80 per minute. With automatic feed (optional at small extra cost), it is even faster.

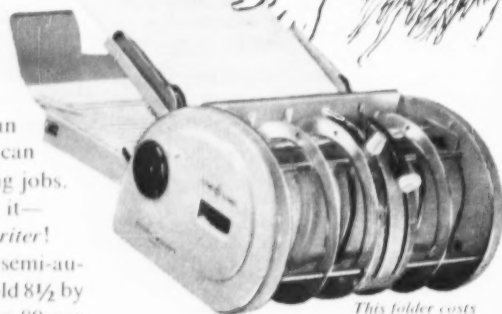


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The FH makes eight different folds, handles sheets as small as 3 by 3 inches, up to 8½ by 14 inches... in most weights and finishes. It even folds sheets stapled together!

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eral observers. It may reach the proportions of a "spree." Settlement of labor difficulties, increased wages, and the anticipation of price increases are factors influencing buying. The portion of wages saved is borrowed promptly for business purposes.

Exports at the current high rate, officials say, have a considerable effect on the economy. Increased exports are credited with a substantial part in the good showing that the whole economy has made in 1956.



A more aggressive policy in combatting communism is in effect. This is particularly necessary as restraints on East-West trade are breaking down. American policy in the Middle East is crystalizing. Nationalism at the expense of world well-being will not be allowed to run rampant. So much depends on oil that Middle East policy has a major economic aspect. Russia's role in the Middle East is being questioned as never before. The new relationship between Russia and Yugoslavia is regarded seriously because it gives the USSR a link with the West—a spearhead pointing to Italy and France. Nothing stands alone these days. The economic more than ever is bound up with the political and the social.



Rate of government expenditures in the remainder of the fiscal year to end June 30, 1957, cannot be calculated accurately as yet. However, there is reason to expect that it will be possible to retire a substantial amount of the national debt and still have something left for tax reduction at the next session of Congress.

Atomic research is expected to speed up as the world has again been reminded that interruption of oil supply is an ever present possibility. This is particularly true in the United Kingdom. It is predicted

that atomic energy will find its first commercial use in the British Isles.

Even officials of the Bureau of Public Roads are surprised at the degree to which the economy has been stimulated in the early stages of their program. This is explained by the fact that the state highway commissions expected the interstate system to be approved a year earlier than was the case. As a result much planning has been done. Actual work can get under way promptly now that adequate funds are available. Over \$4 billion in Federal funds have already been allocated. The thirteen year program—State and Federal—involves about \$100 billion.

Business affects elections more than elections affect business. Few dispute that Herbert Hoover was well qualified to serve as the nation's chief executive. He was swept out of office by a business depression for which he was not responsible. National prosperity was a major factor in the Truman victory of 1948. Present good times lead most experienced observers to predict the re-election of President Eisenhower.



Small business came in for an unusual amount of attention at the hearings before the platform committees of the two parties. One significant point stressed was that large concerns have a lot of equipment that can be written off, an advantage which small business does not possess to the same degree. Accelerated depreciation that would allow small concerns to plough back earnings is favored by politicians, but the loss of revenue involved is certain to meet Treasury opposition, regardless of the party that will be in the saddle next year. Both platform committees were impressed with the argument that big business also has an advantage in being able to obtain funds with less difficulty. This is a much greater problem for small business.

Paul E. Wootton

WASHINGTON, D. C.





*Donald W. Douglas, President and Chairman of the Board, Douglas Aircraft Co., Inc., as photographed by Mead-Maddick*

## Donald Douglas puts wings on his DC-8 jet transport with telegrams

"The age of commercial jet transport would be delayed years without telegrams," says Mr. Douglas. "In resolving problems of design, engineering, tooling, fabrication and procurement, wires daily save us weeks of precious time. For instance, six giant spar-cap blanks, backbone of the DC-8 wing, were ordered from the nation's largest hydraulic press. Telegrams straightened out a press scheduling error that might well have been disastrous, timewise."

More than a million times a day, business finds it

wise to wire. Telegrams quote prices, confirm orders, route shipments. Speed plus the written word make the telegram essential to American business.

**DO YOU KNOW** about these other Western Union services? *Operator 25* tells prospective customers where to buy the things they see advertised nationally . . . *Ticket Fax*: duplicates of railroad tickets are flashed from Pullman and reserved seat centers to main and branch station ticket counters in just 8 seconds by facsimile machine.

 **WESTERN UNION**  
TELEGRAM 

ON ANY OCCASION . . .

IT'S WISE TO WIRE!

# Why 402 U.S. manufacturers now enjoy 100% tax



**Governor Muñoz tells why  
Puerto Rico offers such  
amazing incentives to new  
or expanding manufacturers.**

**I**N THIS STATEMENT, I shall try to explain Puerto Rico's economic position as frankly as I would to any manufacturer or labor leader who met me face to face.

Puerto Rico is currently making a determined effort to stand squarely on its own economic feet. At present we do not have nearly enough jobs to support our people. We are therefore directing every energy to create more jobs at home, and to curtail migration to the States.

That is precisely why we are going all out to attract every new plant we possibly can. But, to date, we are still providing only 25% of the new jobs we need *each year* to keep pace with our expanding labor force. I shall go into details later. But first I want to make two points of my Government's policy absolutely clear:

1. Puerto Rico has no intention of winning industries away from anywhere. We do not grant tax concessions to runaway plants.
2. Puerto Rico's Industrial Development Plan is based on a combination of absolutely ethical incentives. We do not and never will hold out low wages as an attraction to business. My Government's firm philosophy is that wages should rise as rapidly as our economic development permits.

Let me now describe our basic problem in more detail."

## Our Problem

"When people talk of over-population as Puerto Rico's biggest headache, they certainly don't exaggerate.

Our unemployment is high. Our income level is still low—only 25% of the U.S. average. And every year 20,000 more workers swell our under-employed labor forces.

But this is probably putting the cart before the horse. Our real problem is not over-population but *under-development*. What then is our best solution?"

## Our Solution

"I am convinced that the answer can only lie in more and more

industry. Hence we are pinning our major hopes on our industrial development program, as the main pull of what we call Operation Bootstrap.

From the economic standpoint, Operation Bootstrap has but one simple aim—to develop industry, and in doing so, to encourage U.S. manufacturers to *expand* their operations to Puerto Rico. Operation Bootstrap is, in fact, a bold attempt to increase the well-being of our whole Commonwealth—workers and employers alike. And lest anyone should fear that my country's program might injure the U. S. economy, let me now sound a reassuring note:

**1. The U. S. already has 65 million employed. Puerto Rico only needs to create 150 thousand new jobs to solve its present problem.**

**2. One half of one percent of normal U. S. industrial expansion would achieve our whole economic program.**

I hope these comparisons help to put Puerto Rico's modest needs in proper perspective. But, for good measure, let me quote a few more figures to show how important a prosperous Puerto Rico is to U. S. business itself:

**In 1955, Puerto Rico's purchases from the U. S. rose to \$580,000,000. Without Puerto Rico as a customer, New York's gross sales would have dropped by \$67,000,000; California's by \$54,000,000; New England's by \$53,000,000.**

So much for statistics. Now just a final word about my people, without whose consent and willing co-operation Operation Bootstrap would merely be a sterile concept devoid of meaning or hope."

## Bootstrap Underway

"Pay us a visit and I think you will be impressed by the wholehearted faith we Puerto Ricans place in Operation Bootstrap.

We believe in it deeply—and, with practically no exceptions, support its policies right along the line. Thus, I can promise the same eager, cheerful co-operation to every U. S. manufacturer who expands his industry to our Commonwealth.

Scarcely a month goes by that I am not visited by the Mayors of a dozen Puerto Rican towns, all asking for plants to be erected in *their* areas. There's not a community in all Puerto Rico that would not enthusiastically welcome the arrival of a new factory.

For we all realize that though we have made a promising start up the long, long hill to economic prosperity—the summit is not in sight yet. But the Puerto Rican people have squared up to their challenge and are meeting it in good heart."



# in Puerto Rico freedom



**Beardsley Ruml tells how  
new or expanding industries  
(not runaway plants) get  
tax exemption.**

**"S**TART A NEW PLANT in Puerto Rico and you are not only free from Federal income taxes (they don't apply)—you can be exempt from *local* income taxes too. Your freedom from Federal taxes is *not* a concession. It is a *Constitutional* fact which stems logically from that historic American principle 'Taxation without representation is tyranny.' Puerto Rico has no vote in Congress, and therefore no Federal income taxes—corporate or personal."

## Protected by Two Constitutions

"Your business is not only protected by the Commonwealth Constitution, it is permanently guarded by all the guarantees of the U.S. Courts and Constitution, too. As for your *local* income tax exemption, this is an *added* incentive, offered by the Commonwealth Government to attract the new plants that Puerto Rico's economy needs so urgently."

### How Corporate Tax Exemption Boosts Profits

If your net profit after U. S. Corporate Income Tax is:	Your net profit in Puerto Rico would be:
\$ 29,500	\$ 50,000
53,500	100,000
245,500	500,000
485,500	1,000,000

### How Dividend Tax Exemption Boosts Income\*

If your income after U. S. Individual Income Tax is:	Your net income in Puerto Rico would be:
\$ 7,760	\$ 10,000
15,850	25,000
25,180	50,000
51,180	200,000

\*Dividends are tax-free only if paid to residents of Puerto Rico by a tax-exempt corporation. Examples are based on Federal rates (January 1, 1956) for single persons.

## How you gain from a new plant in Puerto Rico

**1. A better return.** Local tax concessions, freedom from Federal taxes, and lower operating costs will all reflect favorably in your company's balance sheet. See table below, left.

**2. Abundant, skillful labor.** Puerto Rico's labor force totals 644,000. The Commonwealth operates an ambitious vocational training program, which will even screen workers and teach them *especially* to operate your machines. The adeptness of the Puerto Rican worker in learning precision skills may be judged by the fact that the following famous companies now have operations in Puerto Rico:

General Electric (Trumbull Components Department), Remington Rand, St. Regis Paper, Beaunit Mills, International Latex, Carborundum Company, Shoe Corporation of America, United Tool and Drill, Sunbeam Electric, Univis Lens, Weston Electrical Instrument Company.

**3. No currency or customs problems.** Puerto Rico is a Common-

wealth freely associated with the United States. It is an integral part of the U.S. economic system. You have none of the problems of operating from a foreign country. Movement of goods, money and people between Puerto Rico and the U.S. is as free as it is between the states of the Union. There's no duty on trade and the U.S. dollar is the currency.

**4. Low capital investment.** New single-story, low-rental factories are ready to occupy. The government will even build a *special* one for you on a very small down payment. Abundant electricity, gas and water are just waiting to be connected.

**5. Ideal location.** Puerto Rico is served by 30 ocean lines and 8 airlines. It is only 5½ hours by air from New York—less than 4 from Miami. Goods are actually made in Puerto Rico one day and are delivered in Los Angeles the next. The climate is perpetual Spring. Temperature stays around the balmy 70's most of the year. Swimming, sailing and fishing are superb. Domestic help is plentiful.

## Is your company eligible?

To find out if your company is eligible for tax exemption in Puerto Rico, call our nearest office:

New York ..... MU 8-2960 ..... 579 5th Avenue  
Chicago ..... AN 3-4887 ..... 79 W. Monroe  
Los Angeles ..... WE 1-1225 ..... 5525 Wilshire

## Or mail coupon for free booklet

Commonwealth of Puerto Rico  
Economic Development Administration  
579 Fifth Ave., New York 17, N. Y.  
Dept. DR-5

Mail me "Facts for the Manufacturer," your report of the advantages of Puerto Rico for plant location.

Name

Company

Product

Address

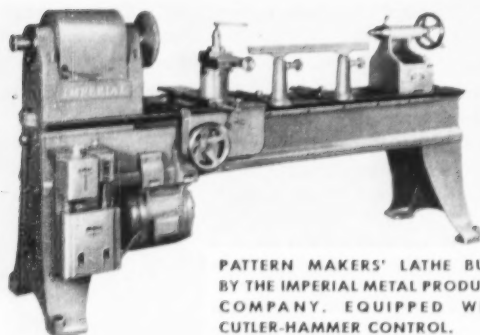
Choice of the Leaders

CUTLER-HAMMER

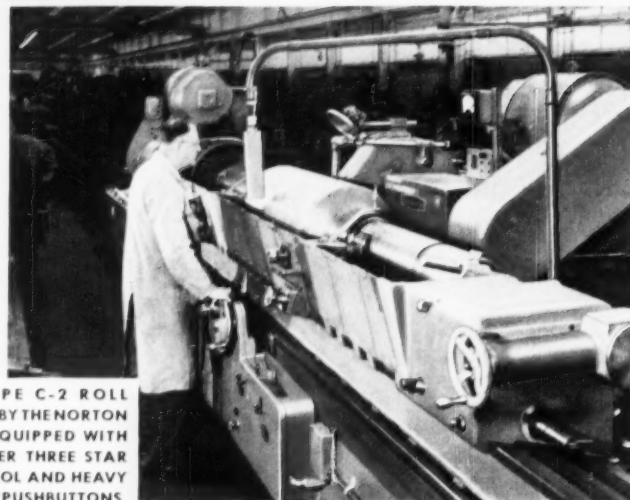
MOTOR CONTROL

C-H

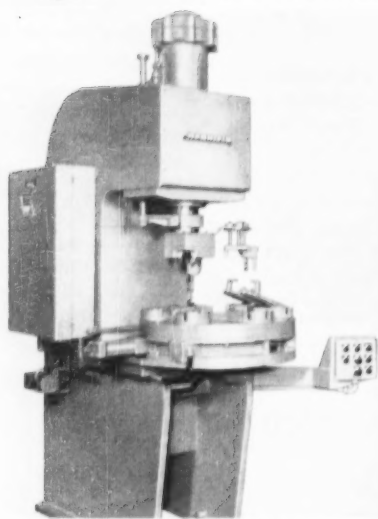
The Mark of Better Machines



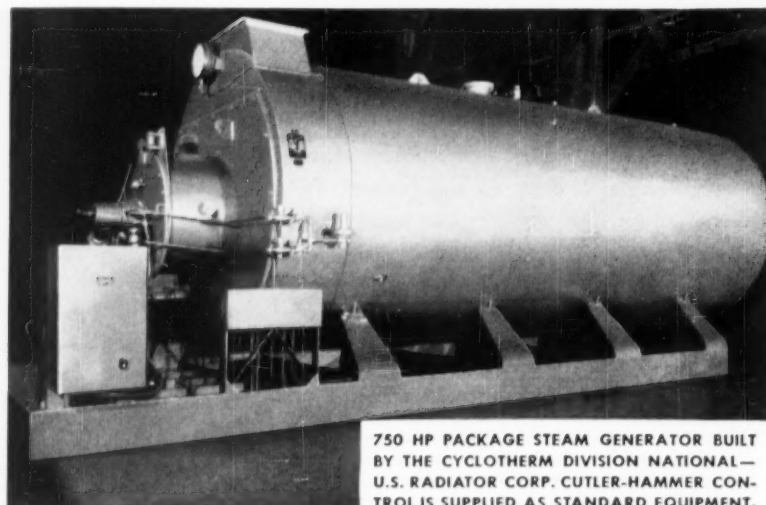
PATTERN MAKERS' LATHE BUILT BY THE IMPERIAL METAL PRODUCTS COMPANY. EQUIPPED WITH CUTLER-HAMMER CONTROL.



NORTON TYPE C-2 ROLL GRINDER BUILT BY THE NORTON COMPANY. EQUIPPED WITH CUTLER-HAMMER THREE STAR MOTOR CONTROL AND HEAVY DUTY OIL-TIGHT PUSHBUTTONS.



25 TON HANNIFIN MODEL F-250 OPEN GAP HYDRAULIC ASSEMBLY PRESS MADE SEMI-AUTOMATIC WITH THE ADDITION OF AN INDEX TABLE. CUTLER-HAMMER THREE STAR CONTROL AND HEAVY DUTY OIL-TIGHT PUSHBUTTONS ARE SUPPLIED AS ORIGINAL EQUIPMENT.



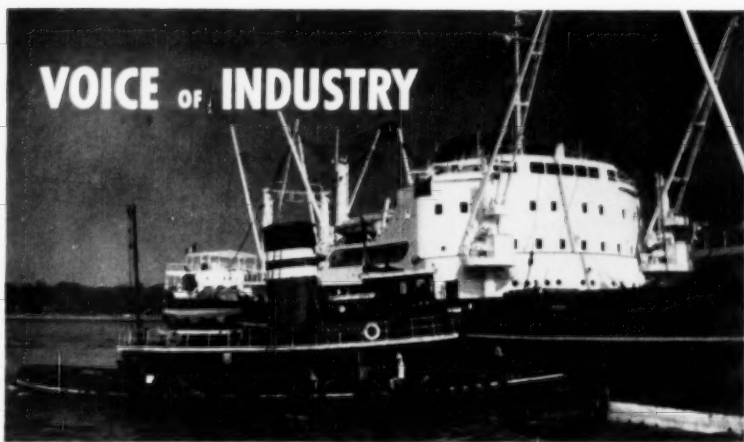
750 HP PACKAGE STEAM GENERATOR BUILT BY THE CYCLOTHERM DIVISION NATIONAL—U.S. RADIATOR CORP. CUTLER-HAMMER CONTROL IS SUPPLIED AS STANDARD EQUIPMENT.

## First With The Finest

Leading machinery builders maintain their coveted position by consistently providing their customers with the latest and finest machines known to industry. But this ability to be *first with the finest* doesn't just happen. It demands a comprehensive knowledge of their customer's needs, coupled with an exhaustive program of research, testing and development to produce machinery equal to their customer's needs.

Leading manufacturers of all types of machines will tell you labor-saving machines are in greatest demand,

but to build a dependable automatic machine the control is a dominating factor. The leaders have proven Cutler-Hammer Three Star Motor Control and Heavy Duty Oil-Tight Pushbuttons definitely superior by actual comparison. . . . They install easier, work better, last longer. More than ever before Cutler-Hammer control is the choice of the leaders . . . the mark of better machines. CUTLER-HAMMER, Inc., 1436 St. Paul Ave., Milwaukee 1, Wis. Associate: Canadian Cutler-Hammer, Ltd., Toronto, Ontario.



HERRS PHOTOGRAPH

### THE LATEST WORD ON:

- *Personnel Problems of Automation*
- *Government Control in Business*

### INCREASED AUTOMATION, UNEMPLOYMENT THREAT?

**COLA G. PARKER**  
*President, National Association of Manufacturers*



Labor leaders have held up automation as a bugaboo to scare workers. They claim more machines will throw more workers out of their jobs. They

cite it as a justification for the guaranteed annual wage and call on government to restrict automation.

According to testimony presented before a Congressional committee, industries ripe for automation account for only 8 per cent of the labor force. And not more than one-half of persons employed in these industries would be displaced by mechanization in the next twenty years.

Thus the re-allocation problem arising out of automation would involve about two and a half million jobs over a period of twenty years. This is not very alarming when you consider that in the reconversion period after World War II we accomplished the same shift in only four years. And many shifts will mean better, not worse, jobs.

Automation is an instrument of hope, not fear. The alarming danger in the future is of a labor shortage, not a surplus. New automatic processes will make new jobs faster than we can take care of them. That has been our industrial history.

**THEODORE K. QUINN**  
*President, T. K. Quinn Co., Inc.*



We are unduly applauding and dramatizing automation, as we do so many other things that catch fire in our jellied American mass society,

raising it to the level of an ideological cult. And we are running to unreasonable extremes in our speculations with respect to its practical potentialities. The gradual substitution of machines for men has been in the process for well over 100 years. While the development has accelerated in recent years, it is not likely soon to overwhelm us.

If automation reached its fulfillment, there would be as much to fear as to welcome in it. For man tends to become a part of the machine rather than its master. We cannot produce machines to act as men without also producing men to act as machines.

Looking way ahead, our great dangers are war and robotism. I do

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### New Executone intercom saves steps, increases output, cuts costs!

Executone Intercom changes walking time to working time—gives you more working minutes per hour. Result? More work can be handled faster, more efficiently, by the same employees!

Snarled, overloaded switchboards are relieved; hard-to-locate employees are quickly found; instant, crystal-clear, voice-to-voice contact between departments ends wasteful walking. You get more work done faster—at lower cost!

And because the new Executone has "built-in-courtesy," each call is announced by a soft chime and signal light. It never interrupts, can't eavesdrop. Handset feature available for confidential use.

Thousands of firms, large and small, found Executone works business miracles... quickly pays for itself many times over. Learn how Executone can save money and time for you. Mail the coupon now. There's no obligation.

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<b>TURBINE LOCOMOTIVE . . . REPAIRS . . .</b>	<b>\$25,076,226.23</b>
<b>STEAM LOCOMOTIVE . . . REPAIRS . . .</b>	<b>4,387,612.44</b>
<b>TOTAL . . .</b>	<b>\$29,463,838.67</b>

(From the Union Pacific 1955 Annual Report)



Yes, my friend, that healthy repair bill of almost 29½ million looks pretty big when stacked up against a repair bill on the family car.

No real comparison, of course. But the point is that you realize the importance of keeping your car, or any other piece of machinery, in good working condition.

It goes back to the old saying "A stitch in time saves nine." As a preventive measure our power units are periodically "shopped," as we call it, to make sure that they are always in first class operating condition. It's just good business, economically sound.

As a result, Union Pacific has an enviable record for maintaining passenger train schedules, and for prompt delivery of freight shipments placed in its care.

## UNION PACIFIC RAILROAD

Omaha 2, Nebraska

not think we shall experience the extreme of either. Automation is only efficient up to a point; its extreme would mean super-organization and control, loss of freedom, and be destructive of individual human values.

**EDWIN J. SCHWANHAUSER**  
*President, Worthington Corporation*



The question of whether or not automation will create serious unemployment may turn out to be purely academic. What this nation actually faces, it seems to me, is an acute manpower shortage over the next ten years, for which automation will become an increasingly important remedy.

It takes 64 million employed today to produce a gross national product of \$400 billion. In ten years this figure is expected to hit \$550 billion. Yet not even the most optimistic forecasters see an increase in labor supply in ten years that will keep pace with the expected industrial expansion. The most realistic estimate is that total population of working age will increase by about one-tenth in the next ten years, while population actually available for work will increase by only some 6 per cent.

If there is a manpower shortage, how, then, will the rise in industrial production take place? One answer, of course, is automation.

**JAMES A. DOLLARD**  
*Field Product Training Co-ordinator, International Business Machines Corp.*



It is generally believed that computer personnel will double every ten years for the next three generations.

For the most part, this increase will be recruited from the ranks of the white collar workers already on the payroll. Their experience, know-how, and loyalty are invaluable. Whatever technical training they need can be obtained in a relatively short period of time. Well over 80 per cent of the work in making office automation function lies in the planning, organizing, and pro-

cedure analysis. Only 20 per cent or less of the work lies in the technical aspects of large-scale machines.

**ROBERT W. JOHNSON**  
*Chairman of the Board, Johnson & Johnson Company*



Automation, or further mechanization, will create temporary dislocations and emotional disturbance. In other cases automation will fail, in the

sense that such procedure is not capable of universal application.

Automation is essentially continuing progress toward more efficient machinery. In the aggregate, automation is intended to create better products at lower costs with higher wages. Through automation we hope to develop better operating conditions, less arduous physical work, and improve quality control. There is little that is revolutionary in automation.

## BUSINESS—MORE FEDERAL CONTROL?

**DAVID FROMSON**  
*Secretary and Counsel, Greer Hydraulics, Inc.*



The best solution to the problem of government vs. business is for business to make a greater effort to keep its own house in order.

As businesses engage in predatory and unethical practices, inevitable and compensating legal controls are generated. Conversely, as industries voluntarily assume sound ethical standards, there is a relaxation in regulations affecting their economic life.

Protective legislation by the government in recent years has been merely the result of abuses and breaches of ethical awareness. The only way to prevent further inroads by government is for business itself to assume a greater ethical responsibility. I believe the trade association is the instrumentality that can best build up ethical standards of self-control, see they are adhered to, and plead business' cause before government.



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A banker's stock-in-trade is his time. That's why the United States department of The Chase Manhattan Bank is organized to save you time in every way possible. First of all, for purposes of service and personal contacts, the country is divided into zones. Each zone is served by a team of Chase Manhattan people who spend all their time serving the particular financial needs of that area. You'll be talking to bankers who understand quickly . . . who can be both friendly *and* efficient.

There are many ways in which you may be able to save time and money for yourself, your bank and your customers.

*"Why don't you talk to the people at Chase Manhattan?"*

Write for "Doorway to Greater Usefulness," the 33 reasons why nearly half of all banks with New York correspondents have chosen Chase Manhattan.

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# All the rest is handling

## How Louden Hot Metal Carriers & Die-Handling Cranes expedite operations in a new casting plant

Castings play a major role in the Johnson product, its famous Seahorse Outboard Motor. Here, in the new Johnson plant at Waukegan, the die-casting process proper is a brief contact between die and molten aluminum in the die-casting machine. *All the rest is handling.* Louden handling. Dies in and out of storage. Dies inserted in casting machines. Molten aluminum poured into carrier-borne ladles, the ladles hurried to the die-casting machines, lifted and tilted and poured. The castings go one way, the dies are removed, taken to die-maintenance and cleaning, then returned to storage.

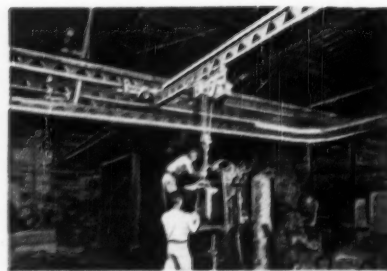
The Louden Stacker Crane has doubled the capacity of the die-storage area. Two Louden Hot Metal Carriers serve 65 die-casting machines. 18 Louden Die-Handling Cranes serve as the name implies. Louden equipment speeds operation, simplifies handling, utilizes the "airlanes" above, makes more space below available for production processes, saves manpower, cuts costs, increases production.

Louden can serve you equally well whether yours is a die-casting operation, fabrication of parts, manufacture of hose or anything else in the gamut of industrial operations. Louden has the engineering, the experience and the equipment to turn to greatest account the fundamental advantages of overhead handling. And you should not wait another moment to see what Louden recommendations can do for you. Write, phone or wire today.

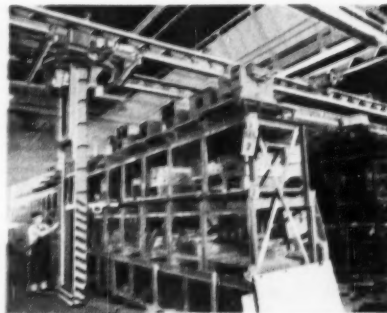
### THE LOUDEN MACHINERY COMPANY

6509 Broadway, Fairfield, Iowa

A Subsidiary of Mechanical Handling Systems, Inc.

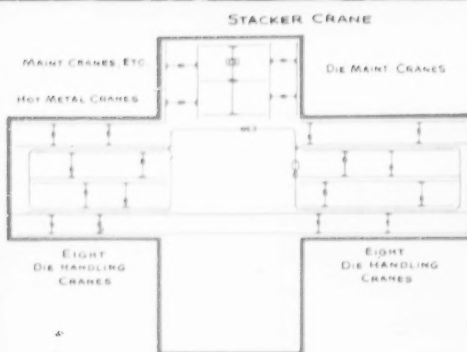
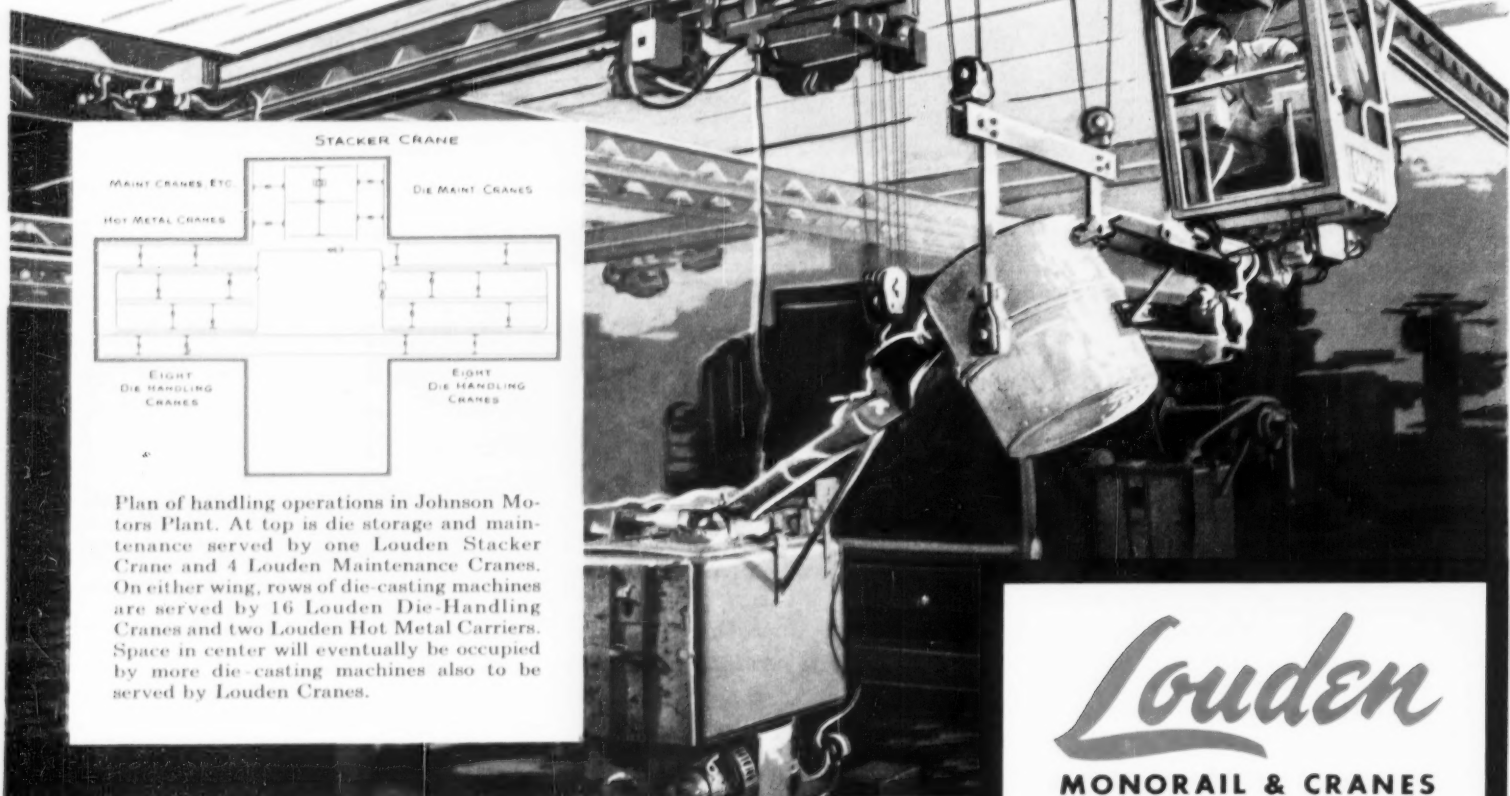


Louden Die-Handling Cranes not only help remove dies from casting machines, but take over the "bull labor" in the die maintenance and cleaning department.



In die storage, Louden Stacker Crane removes die from storage. This crane has doubled the capacity of the storage area.

Precise control of the ladles of molten aluminum is needed—and is furnished by Louden precision control from the operator's cab of this hot metal carrier. 2 Louden Hot Metal Carriers serve 65 die-casting machines.



Plan of handling operations in Johnson Motors Plant. At top is die storage and maintenance served by one Louden Stacker Crane and 4 Louden Maintenance Cranes. On either wing, rows of die-casting machines are served by 16 Louden Die-Handling Cranes and two Louden Hot Metal Carriers. Space in center will eventually be occupied by more die-casting machines also to be served by Louden Cranes.

**Louden**  
MONORAIL & CRANES

SINCE 1867...THE FIRST NAME IN MATERIALS HANDLING



# HIGHLIGHTS & sidelights

comment by

Anneta R. Gardner

## Guide to guided missiles

How does the *Terrier* differ from the *Snark*? Will the *Talos* replace the *Nike*?

If you produce chemicals, metal products, ceramics, or oils, you may someday be supplying materials or parts for units like these.

Guided missiles are generally grouped on the basis of application: surface-to-air, air-to-air, air-to-surface, and surface-to-surface. They may be propelled by turbojets, ram-jets, or rockets with liquid or solid fuels; and guided by radar beam, command, or homing systems. (An example of the latter is attraction to the infrared light of an aircraft exhaust.)

Among the surface-to-air missiles are the Army's command-guided *Nike*, the Navy's beam-guided *Terrier* and *Talos*, and the Air Force's long-range *BOMARC* interceptor.

In the air-to-air group are the rocket-powered *Sparrow I* (Navy) and *Falcon* (Air Force); and in the air-to-surface group, the *Petrel* (Navy) and *Rascal* (Air Force).

Surface-to-surface missiles include

the liquid-fueled, rocket-powered *Corporal* (Army), designed to carry an atomic war head and to travel 50 miles or more; and four turbo-jet-propelled, aircraft-type missiles: the Navy's *Regulus*, and the Air Force's *Matador*, *Snark*, and *Navaho*.

## Twelve that shaped the world

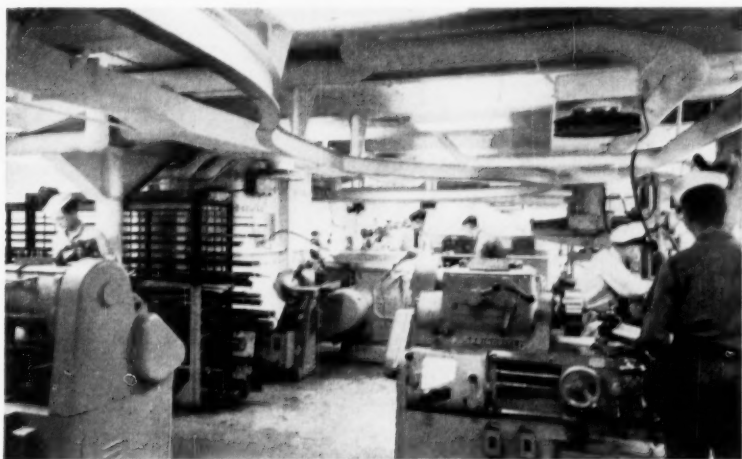
If you were asked to pick six scientific principles and six inventions that forged our civilization, which would you choose?

Du Pont engineers asked themselves that question and came up with these:

Inventions: movable printing type, clocks with interchangeable parts, the telephone, and the steam engine, automobile, and airplane.

Scientific principles: Copernicus' concept of the solar system, Newton's law of gravitation, Darwin's theory of evolution, Lavoisier's analysis of the composition of air, Pasteur's theory of bacteria, and Einstein's theory of relativity.

This "golden dozen," plus six engineering "wonders of the world,"



## Floating shop

Even on dry land, this well-equipped, well-lighted machine shop would be the envy of the neighborhood. Actually, it's located far below the flight deck of the new U. S. S. Forrester. G-E fluorescent lamps overhead and the supple-

mentary incandescent lighting mounted on individual machines provide for good seeing. Overhead conveyors make it easy to handle heavy parts. Note neat racks, too, that help conserve space, keep shop shipshape.

# "Saved 400 pages of typing in 1 week

## with a Kodak Verifax Copier"

The advantages of the completely different Verifax Copier are reviewed by Ruth E. Cornican, secretary to two vice-presidents at Bryant & Detweiler Co., Detroit, leading building construction firm.



### "All-day retyping jobs now done in 15 minutes"

Takes just 1 minute to make 5 Verifax copies of a letter, bulletin, or other office record which formerly had to be retyped.

In 15 minutes—or less—the daily output of a skilled typist is matched.

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Never a retyping mistake or omission. Data written in either pencil or pen—and spirit-duplicator copies—are faithfully reproduced with the Verifax Copier.

### "Communications speeded"

Changes of specifications, often running from five to thirty pages, are passed on to subcontractors without costly retyping delays.

Verifax copies of an incoming report or small drawing are routed simultaneously to all concerned—to customer, accounting department, drafting room, general superintendent. And Verifax copies quickly make up the difference when a subcontractor doesn't send enough copies of a proposal.

### "\$240 Verifax Copier quickly paid for itself"

To figure out how quickly a Kodak Verifax Copier will save its cost in your own company, simply do this: Compare the cost of retyping a page with the cost of making Verifax copies—you get 5 in 1 minute for just 2½¢ each.



New free booklet reveals the 101 short cuts which Verifax Copying has brought to thousands of offices... shows how the cost of a Kodak Verifax Copier—as low as \$148—is usually saved the first month.

Prices quoted are subject to change without notice.

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Rochester 4, N. Y.

Gentlemen: Please send free copy of "New Time Saver—New Idea for Every Office."

Name \_\_\_\_\_ Position \_\_\_\_\_

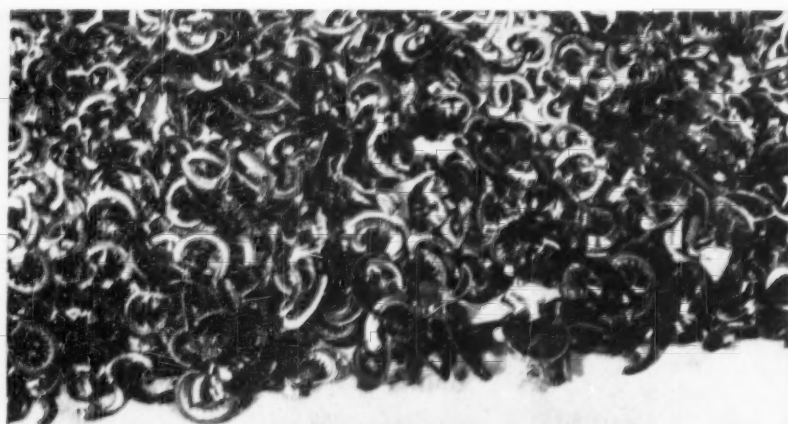
Company \_\_\_\_\_

Street \_\_\_\_\_

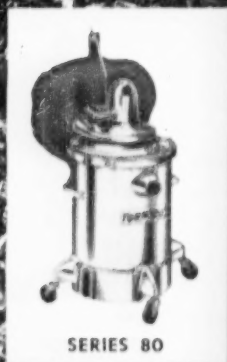
City \_\_\_\_\_ State \_\_\_\_\_



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and a sampling of the new scientific methods being applied to industrial research, are described in an excellent 32-page booklet published by the company. Called *The story of science in industry*, the booklet also emphasizes the role of management in coordinating science and engineering to provide "better products for better living" in the years ahead. (Copies from Du Pont Public Relations.)

### You can take it with you

The portable radio and the flashlight are familiar examples of the convenience that storage batteries can provide. But product designers are extending the dry cell's uses far beyond these familiar items. You can now get a portable, battery-operated electric fan, a vacuum cleaner for your car, or a drink-mixer. And, to facilitate inventory-taking, and make it easy for the traveling executive to keep in touch, Dictaphone has a battery-operated dictating machine, a tape-recorder that weighs less than three pounds. How about converting your own products?

### Materials: a look ahead

Our survey of materials changes (page 57) turned up one tip you

might want to remember when Christmas time rolls around.

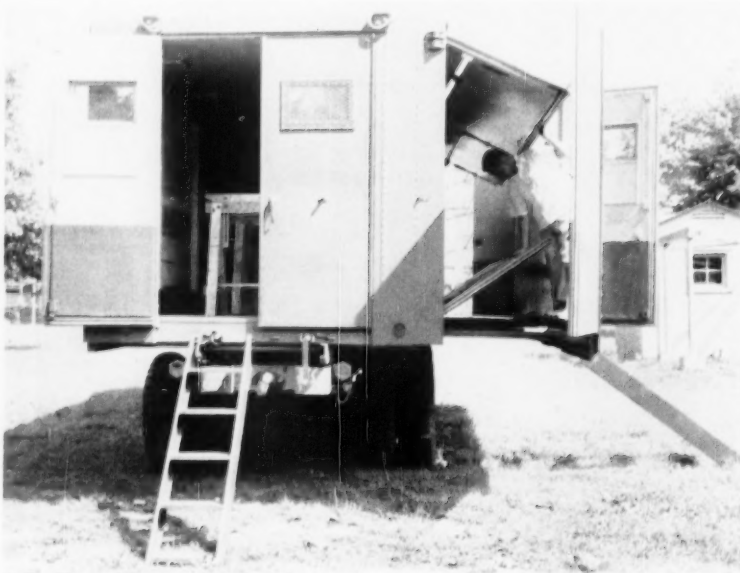
A jewelry manufacturer listed as the major materials used in his products five years ago, *gold wire* and *imitation pearls*. To-day, he notes, his major materials are *gold wire* and *cultured pearls*. What does he think he'll be using in 1960? Only *gold wire* was listed. Did he forget the pearls? We thought so, until we saw a note at the bottom of the page: Pearls are on the way out. They will saturate the market, he predicts. Tailored goods will be in demand.

Incidentally, we were most pleased with the response to our survey, and grateful to all who answered.

### How much juice?

In April (page 115), we mentioned the problems created by inadequate electrical wiring and noted the power requirements of a number of electrical units.

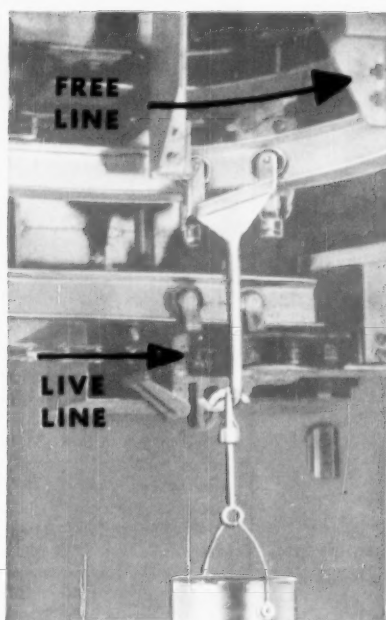
Now, Wallace Thorsen, president of Gram Distributing Company of New York, sends a copy of his newest *Dial-A-Gram*, "Full Housepower at Your Fingertips." It's a circular indicator, which tells how much "juice" is required for 80 different appliances (including barbecuers, germicidal lamps, shavers, and water heaters) and



### This truck grows

Taking a hint from the old drop-leaf table, Army Engineers at Fort Belvoir, Va. have devised this expandable van with hinged floor and roof sections that swing into place as the side walls are moved out. This particular truck will

be used for Army photographic work. But many companies might want to adopt the idea for traveling sales displays and training schools. Expansion and contraction take less than five minutes.



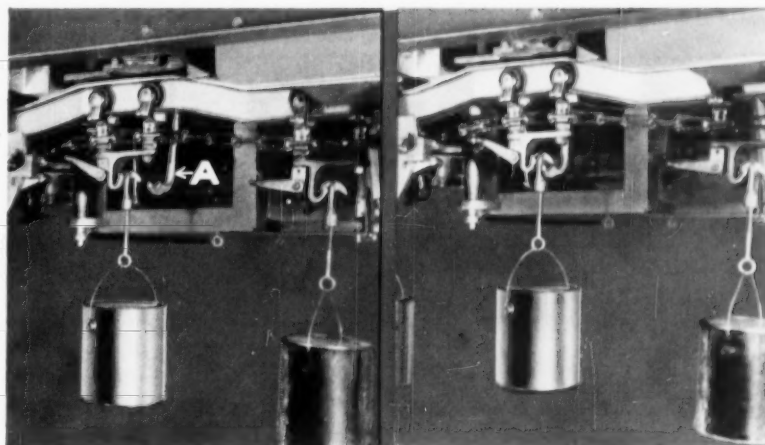
## How TRANS-FREE provides trouble-free transfer from live line to free

### Allied Conveyors' New Mechanical System has Complete Automatic Dispatching

Allied Conveyors' new Trans-Free system can now bring to new and old conveyor systems alike, automatic, trouble-free transfer from live line to free. Trans-Free is a completely mechanical system that can automatically dispatch loads to an almost infinite number of stations. It operates entirely without electrical switches, air cylinders, etc. You'll find it less costly to install originally. You'll find it will operate with virtually no maintenance expense.

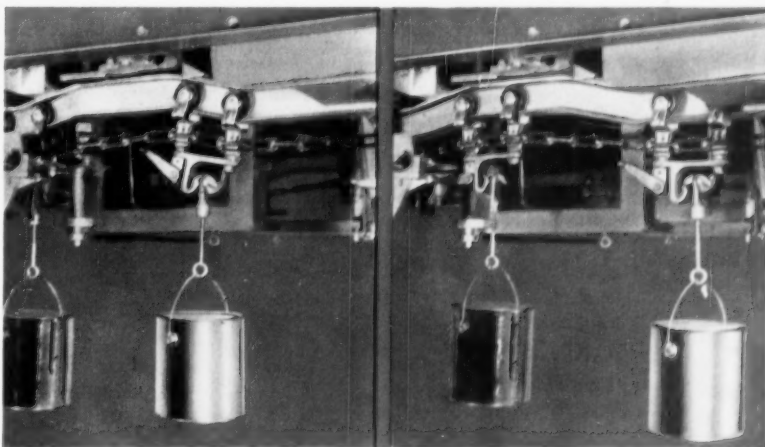
#### SEE TRANS-FREE IN ACTION!

The next time you're in Detroit, be sure to call Allied for a date to see Trans-Free in action. OR—write today for a complete illustrated booklet showing the many advantages of Trans-Free.



1 Indicated for transfer at this point, the load automatically triggers the transfer hook (A) swinging it into position. Transfer hook on free line travels at same speed as main line for perfect synchronization.

2 Load is powered along main system to engage transfer hook. Note the simplicity of the transfer. Entire transfer is completed mechanically without air cylinders, solenoid switches, etc.



3 As track dips to original level, load hook and transfer hook are both engaged, giving positive control throughout transfer. Incoming and outgoing loads are coordinated to prevent collision.

4 Transfer is completed as trolley reaches original level. Load now moves onto auxiliary line (which may be powered or free, as user prefers) for intermediate operations or storage.



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provides space for calculating overall power requirements and costs.

The calculator is designed primarily for use by power companies and electrical contractors as a sales tool, but individual copies can be obtained for 25 cents.

### More news of bues

As predicted (see November 1955, page 97) car buyers are turning to darker shades; while houses get gayer. Automakers like Dodge now report 20 per cent of their sales in black (as opposed to 15 per cent last year); while the most popular two-tone combinations have shifted from such groupings as red and white to dark and light gray.

In homes, meanwhile, color is booming. Kelvinator says yellow and turquoise are increasingly popular; while pink, though still high on the list, is going down.

Component makers will also want to watch trends like these and be ready to supply their products in colors to match and contrast.

More news on page 23

### Glossary lists ready

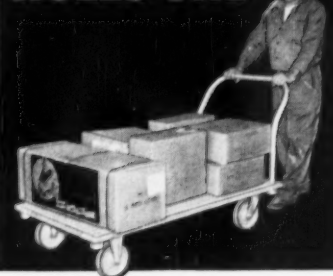
The words industry uses aren't always defined by standard dictionaries as clearly or as accurately as they might be. So, industry has compiled a good many glossaries of its own, covering topics from atomic energy to packaging.

As mentioned a few months ago, we've been making a collection of these industrial dictionaries (both books and booklets), and have prepared a reference list of about 125 chemical, metallurgical, textile, electrical, and engineering glossaries which are available to business executives.

We'll be glad to send a copy of the list, with our compliments, if you will write, enclosing a self-addressed envelope (standard business size).

Address: Industrial Editor, DUN'S REVIEW AND MODERN INDUSTRY, 99 Church Street, New York 8, N. Y.

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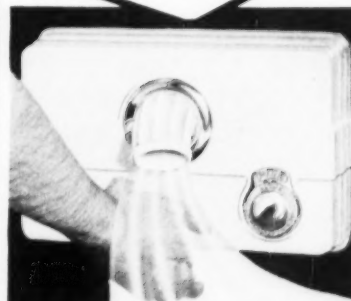
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## Sidelights on the atom

The unusual becomes almost commonplace as new nuclear reactors sprout across the country. Already, more than 100—for research, propulsion, central station generation, and portable power (photograph, above)—are built or building. They call for strange new materials and unusual production techniques. But the problems they pose will be encountered by an increasing number of companies in the years just ahead.

The pictures here show a few of the hurdles—and opportunities—that industry will encounter as the atomic reactor program grows. Can your company participate? Chances are, it can—either by fabricating

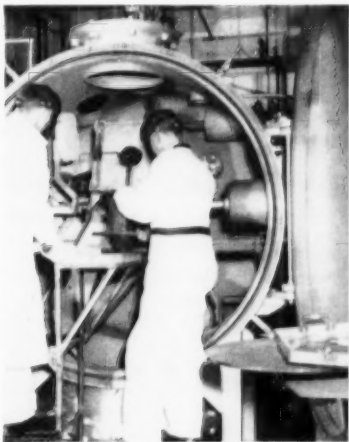


This is the heart of industry's first research reactor, built by North American Aviation for Armour Research Foundation in Chicago.

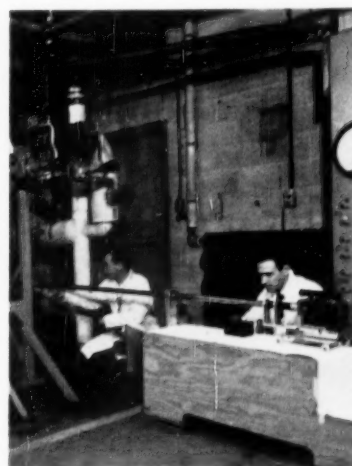
new equipment, supplying standard products adapted to reactor needs (see January and February 1955), or developing new instruments and new forms materials. It's still a wide-open field, and now is the time to get in.



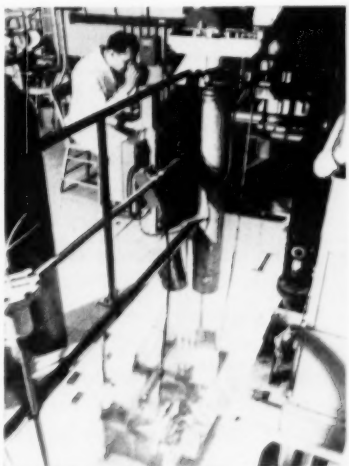
Thar's gold in them thar reactors, as this gold tank lining, fabricated by Nooter Corp. for the AEC proves.



Special alloys for nuclear fuel elements are produced in vacuum-melting furnace at Babcock & Wilcox.



Even picture-taking needs a new approach. To check reactor tubes, GE uses telescopic movie camera.



Uranium fuel, immersed in water, is photographed with single-lensed camera that produces 3-D views.



## "Bunn Tying Machines save time ... when the need is greatest"

says Louis A. Weicker, Executive Vice-President,  
Commerce Clearing House, Inc., Chicago, Illinois

"One of the key operations in this business, coming at the time when train schedules must be met, is bundling and tying our tax and business law Reports," says Mr. Weicker. "Every day thousands of loose leaf Reports on new tax and business law developments must be assembled and tied into bundles to meet post office requirements and help get them to our subscribers quickly."

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### Twelve Tips on

## SALES FORECASTING

C. L. LAPP

Professor of Marketing,  
Washington University

THE SALES FORECAST is one of the most important decisions made in a business. If it is inaccurate, then other determinations based on it will be inaccurate, such as: general sales expenses, advertising and sales promotion allocations, salesmen's quotas and territories, manpower requirements, inventory controls, purchasing policies, financial controls, and the selection of products and product lines.

There is no perfect sales forecasting procedure to fit all companies. There are a number of ideas that can be of great assistance in establishing a procedure to fit an individual company.

1. Make certain that there is agreement on the meaning of the words used, such as: market potential, sales potential, sales forecast, sales quota, short-term, and long-term. Authorities often make these distinctions: *Market Potential*—expected sales of a product or group of products by an entire industry for a stated period; *Sales Potential*—the market potential in a specific geographic area; *Sales Forecast*—expected sales of a product or group of products by a single company for a stated period; *Sales Quota*—breakdown of the sales forecast for a period less than that of the forecast, by individuals, by products, and/or by territories; *Short-Term*—any period of sixteen months or less; *Long-Term*—any period longer than sixteen months.

2. Maintain adequate records of past sales by as many breakdowns as feasible. This data is extremely useful in determining more accurately future sales possibilities.

3. Review past forecasts of sales to find out what errors in procedure or judgment were made. Such reviews will build up a valuable backlog of guideposts toward improved forecasts.

4. Be sure to include all factors that may have a bearing on future sales. These might include: breakdowns of past sales; market potential; regional and national indicators of business conditions; changes in buyer acceptance of products; manpower changes in the organization; and policy changes affecting products, promotion, or competitive position.

5. Evaluate trends in terms of both prices and units.

6. Explore the use of information available from the many sources within the Government.

7. Become acquainted with the tools of forecasting, such as opinion surveys and charts.

8. Leave room in the procedures for personal judgment to supplement all the other factors that are involved.

9. Test any new procedure against historic data, especially against turning point years such as 1929, 1940, or 1946.

10. Compare forecast results with the results of others in the same or related fields.

11. Check any final forecast against nation-wide general forecasts to see how it compares with business trends.

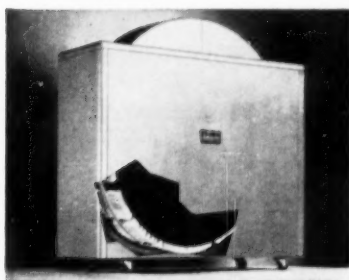
12. Revise short-term forecasts at least every three months and project for the coming three months. In this way, the forecast will remain fixed.

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**1. No costly transposition needed,** or new cards when you change from slow-poke, money-wasting files to *Revo-File*. No key-hole punched cards needed by *Revo-File*. Just pick up your *present* cards by handfuls . . . drop 'em

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**3. No limits on work speed!** Since cards are not attached, one or hundreds can be removed and re-filed instantly. Easy to place *Revo-File* in most restful working position for any clerk. Cards come to her, not vice versa. All standard and most off-size cards accommodated. Manual and automatic electric selector models.



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# What has the strike done to Ryerson steel stocks?

In general, we are happy to report, our steel stocks are holding up very well—with the inevitable exception of structural and carbon steel plate inventories.

Because we entered the strike period with the largest stocks in the nation, we are still able to give quick shipment of almost every type of steel in normal warehouse

quantities—even though we have not been able to replenish most stocks since before the strike began. And in some cases we can supply larger quantities to help you keep production going until your delayed mill shipments arrive. Here's a quick summary of the present status of Ryerson stocks for your guidance.

**Sheet and strip**—Cold rolled pattern-size sheets and coils stocks are excellent and galvanized stocks are good at most Ryerson plants. Some shortages have developed in our inventories of hot rolled sheets and coils, but when we cannot furnish exactly what you need, we may be able to supply a practical alternate from our inventories of special gauges and sizes. For example, we can sometimes furnish 13 gauge material when 12 or 14 gauge is not available.

**Hot rolled carbon bars**—Large overall tonnages on hand. Shortages are developing in a few sizes, but we can still take care of practically any hot rolled bar requirement.

**Cold finished bars**—Stocks more than adequate to meet current demand, both as to tonnage and range of sizes and types. Call us for any quantity of Ledloy, machinery steel, shafting, accuracy stock or other cold finished bar steel.

**Tubing**—In excellent supply. Seamless and welded mechanical and fluid power tubing, structural tubing and boiler tubes—all available in a full range of sizes, and in almost any quantity.

**Alloy bars**—Most all types in plentiful supply. Hot rolled alloys are not quite as plentiful as cold drawn—heat treated types not quite as plentiful as as-rolled—but we can almost always furnish your exact requirements or a practical alternate.

**Stainless steels**—Bar, pipe and tubing stocks are adequate to meet current demand—nickel-bearing sheets and plate stocks not quite so good but improving every week. You will be helping to assure future availability of all stainless products in the nickel-bearing analyses if you always give us any rating that may apply.

**Structurals and plates**—In tight supply for many months, these products continue to present the most difficult supply problem. However, check with us on your urgent requirements and we will help you if we possibly can.

**Reinforcing steels**—Most Ryerson plants are in a very good position to take on new reinforcing business—both re-bar and wire mesh.

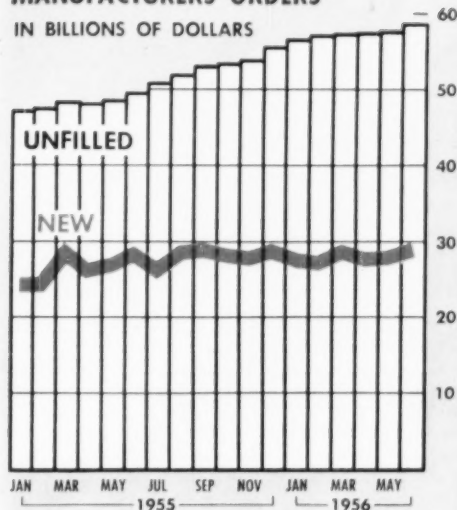
Whatever your steel requirements, it will pay you to check with us. The nation's largest steel service organization is still your best source for steel of dependable quality, accurately cut and delivered to meet your schedule. As always, your inquiries and orders are sincerely appreciated.

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IN BILLIONS OF DOLLARS



# The Trend of BUSINESS

- Labor market tightens
- Auto stocks reduced
- Prices inching upward
- Incomes and buying up
- More mortgage foreclosures
- Construction peak promised

**I**F A HEADACHE can be fortunate for any but the aspirin manufacturers, the typical industrial employer probably suffered distress of the "fortunate" variety in the early Fall. Fortunate in the sense that his problems resulted from conditions of continued and unprecedented business boom.

Bustling to fill the large volume of orders for both defense and civilian products, the electrical machinery and aircraft industries were more eager than ever to get engineers, draftsmen, and skilled machine operators, often could not find qualified people. Notwithstanding some uncertainty about the outlook for automobile production, jobs for skilled metalworkers and mechanics outnumbered the candidates in many of the major industrial areas.

The recruitment of high-grade professional and skilled personnel was a more or less persistent problem all year long. The pile-up of orders for manufactured goods was not noticeably retarded by the drop-off in automobile production, nor was the supply of skilled workers noticeably increased. Employment advanced almost steadily in the first eight months of 1956, while unemployment fluctuated mildly at a low level, the inexperienced and the unskilled predominating among the jobless.

Filling the sizable volume of manufacturers' orders (chart above) should require high production in the coming months. While the national supply of manpower could hardly be called other than sufficient, employers can expect a continued hunt for certain kinds of workers.

### 66,000,000 plus

There were signs that the boom was not transitory, but more soundly based than ever. For the first time in a number of years, the Lawrence, Mass. and Scranton, Pa. areas moved out of the "substantial labor surplus" classification. While joblessness in those areas was far from eliminated, there was some evidence of success in the efforts to solve the long-term industrial dislocations peculiar to those two areas.

The number of major centers with a substantial labor surplus dropped to three in July, down from five in June and seven a year ago. There was still hope for recovery in the three, all auto centers, given an enthusiastic response to the new 1957 models. Major employment areas with more job openings than applicants increased to 52 in July, compared with 44 in June and 29 last year. While there was probably no instance where labor shortages were hampering production, the over-all labor market seemed rather tight.

Employment in July was sustained at June's record level, surpassing the 66-million mark, according to the Census Bureau figures. Strikers, away from their jobs but not looking for other work, are counted among the employed by the Census Bureau.

### Production rebounds

The pace of industrial output quickened in August, regaining the momentum lost in July because of the steel strike. While total production in July was at the lowest level in fifteen months, it was still about as high as a year ago, and almost one-third greater than in the so-called "average" years 1947-1949. The sharp cut in steel production in July, and the related curtailments in coke, iron ore, and coal mining, resulted in a 4 per cent decline in the Federal Reserve Board's index of over-all industrial production for that month. Toward the latter part of August, the index appeared likely once more to overtake June's 141 (1947-1949=100).

### Auto stocks reduced

A month-to-month gain in automobile production in July, the first since early this year, boosted auto output a slight 4 per cent, but it was still 32 per cent lower than a year ago, and due to slide again in August as the industry geared for model changeovers.

Although sales of new cars continued to lag behind the comparable 1955 level, dealers managed to pare their stocks again. For the first time this year, dealers inventories dropped below a year ago to 650,000 cars on July 31. This compares with 700,000 cars at the end of June, and 707,000 on July 31, 1955. Should August sales equal July's, dealers may be relieved of another 50,000 new cars.

### Quick on the trigger

It was predicted recently by the First National City Bank of New York that there will be in the last three months of 1956, "fewer inventory worries, a stronger capital goods outlook, near-capacity operations, faster payrolls in the steel industry, and improved business confidence."

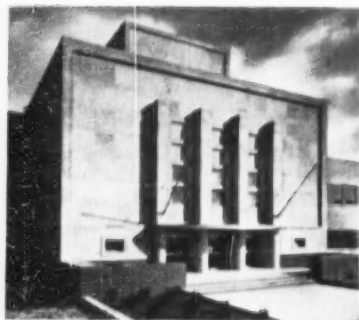
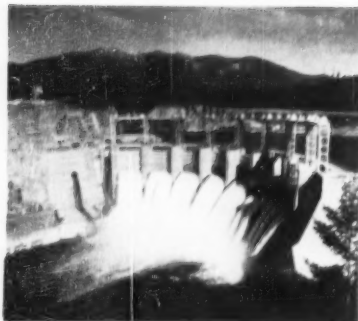
As for the "faster payrolls in the steel industry," the implications were widespread. The settlement of the steel strike was not expected

## Weekly Business Signposts

SELECTED BUSINESS INDICATORS	LATEST WEEK*	PREVIOUS WEEK	YEAR AGO
Steel Ingot Production.... Ten Thousand Tons	234	215	219
Bituminous Coal Mined... Hundred Thousand Tons	100	95	95
Automobile Production... Thousand Cars and Trucks	125	128	160
Electric Power Output... Ten Million KW Hours	118	115	108
Freight Carloadings..... Thousand Cars	770	715	776
Department Store Sales... Index Number (1947-1949=100)	111	107	106
Wholesale Prices..... Index Number (1947-1949=100)	91	90	99
Bank Clearings..... Hundred Million Dollars	116	105	101
Money in Circulation.... Hundred Million Dollars	307	306	303
Business Failures..... Number of Failures	289	229	216

Steel data are for the fourth week of August; coal and sales are for the second week; all others for the third week.

Sources: Amer. Iron & Steel Inst.; Bureau of Mines; Automobile News; Edison Elec. Inst.; Assn. of Amer. Railroads; Bureau of Labor Statistics; DUN & BRADSTREET, INC.



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## The Trend of BUSINESS

to "trigger general inflation," according to Mr. Sinclair Weeks, the Secretary of Commerce. Nevertheless, announcements of higher selling prices by manufacturers multiplied in August. Companies in such varied and unrelated industries as rubber shoe products, television sets, and aluminum products, as well as steel, alerted their customers that their products would henceforth be higher priced, because of recent wage and other cost increases.

The firmness in industrial prices even seemed to be spreading to agriculture, although the slight rise in the prices received by farmers for their crops and livestock was partly seasonal. Announcing that the cost of living hit a record high in June, the Bureau of Labor Statistics predicted a further, though milder, rise for July.

### From pantry to piston

Higher prices apparently did not deter consumer buying. Retail sales in July and early August were sustained at the record Spring rates, maintaining a slight gain over a year ago. Although retail grocery sales dipped in July, volume rose at eating and drinking places, possibly reflecting the increase in travel and vacationing. Gasoline service stations did a booming business, enjoying an increase in sales compared with both the preceding month and a year ago.

Although consumers' interest in household furnishings, hardware, and building materials diminished somewhat, the decline was usual for the time of year and volume continued to exceed that in the comparable month of last year.

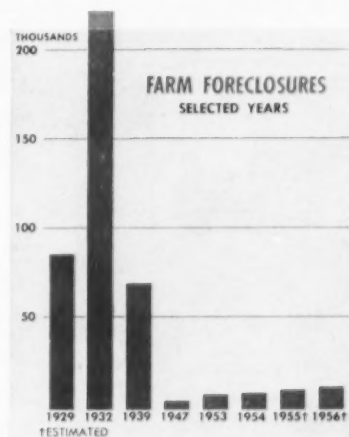
### Less borrowed, more owed

The volume of new extensions of consumer credit in June was slightly smaller than in May, but repayments dipped a bit, too, resulting in a slight rise in total consumer credit outstanding. The largest gain continued to be in automobile installment credit, although personal loans and charge account debt were also higher.

There was \$37.1 billion worth of consumer credit outstanding at the end of June, almost \$5 billion more than a year previously. While there was still no really dependable yardstick for measuring the congruity of such a volume of personal short-term debt, consumers generally appeared financially sound.

### Income, savings up

Disposable personal income, the money consumers have left after paying their taxes, was at an annual rate of \$284.9 billion in the second quarter of 1956, more than



*While increasing recently, distressed sales of farms are considerably fewer than before the War. Data from Bureau of Agricultural Economics.*

\$16 billion higher than a year previously. Personal income continued to hit new record levels in July and August. Individuals saved \$5 billion in the first quarter of 1956, the most in almost four years, according to the SEC.

Although home builders remained anxious for a relaxation of interest rates on home mortgages, their hopes seemed unlikely of fulfillment. Expressing doubt that there will be any easing in credit restrictions in the last six months of 1956, George S. Moore, chairman of the American Bankers Association credit policy committee, said that rates on real estate mortgages may show "some slight increase," while rates on consumer loans should hold steady and no appreciable change in the rates on agricultural loans is foreseen.

Non-farm mortgage foreclosures, numbering 7,141 in the first quarter of 1956, were more than twice as numerous as in the first quarters of 1946 and 1947. But foreclosures in those years were unusually low. This year's volume is dwarfish in comparison with prewar figures. In the first quarter of 1940, there were 18,695 non-farm mortgage foreclosures, and a whopping 60,924 in the first quarter of 1935. There is a similar pattern in farm foreclosures (chart on this page).

### Building new heights

Contract awards for future construction in the first seven months of 1956 were at a record high, 8 per cent above the comparable 1955 level. Although July awards dropped 5 per cent below a year ago, it was still the second-highest volume ever recorded in July, exceeding the third highest figure by 17 per cent. According to the F. W. Dodge Corporation, which compiles the figures, "construction activity based on these contract awards will undoubtedly reach new heights this year, with enough emphasis on business and government investments in new facilities to offset a softening in residential building."

The actual volume of new construction put in place in July was valued at \$4.2 billion, a new record for the month. Outlays for new building were 5 per cent higher than in June, 3 per cent higher than a year ago. The July steel strike and the resultant difficulty in obtaining structural steel apparently did not hamper building operations to any great extent.

There was a seasonal rise in almost every kind of construction, although the actual volume of new dwelling units built was 15 per cent below the year-ago level. Farm construction, too, dropped below last year's volume, but it was 6 per cent higher than in June.

Residential building comprised about 33 per cent of all construction this July, a slightly smaller proportion than a year ago. Most of this loss was offset by gains in public construction, principally highways and public works.

## Display Center adds impressive front with money saved by an ARMCO STEEL BUILDING

You can get custom-built convenience at savings up to 50% using Armco units. For details, mail coupon below.



Bill Hollis Display Center, Fort Wayne, Indiana, was planned with economy in mind. Except for the architecturally treated front, the entire 40' x 96' structure is a standard Armco Steel Building. Walls, ceilings and roof are prefabricated Armco STEELOX Panels. Savings effected by the Armco STEELOX method of construction paid for the impressive front. A novelty shop is in the front of the building and a workshop in the rear.

### 28 to 100,000 sq. ft. or more

To meet your space needs, Armco Steel Buildings are available from 28 to 100,000 sq. ft. or more for showroom, factory, warehouse, office, shop or similar structure. Armco will erect your building or your local contractor can do the job. Easy-to-handle STEELOX Panels are the key to lower construction costs. Quickly locked together, then bolted top and bottom, they provide a permanent, weather-tight, fire-resistant structure that requires minimum upkeep.

Outside and inside, Armco Steel Buildings lend themselves to architectural treatment—if you require it. And if your needs grow, they can easily be expanded or relocated.

### Armco Drainage & Metal Products, Inc.

306 B Curtis Street  
Middletown, Ohio

Please send me information on Armco steel buildings for the following use:

Size \_\_\_\_\_  
Name \_\_\_\_\_  
Company \_\_\_\_\_  
Street \_\_\_\_\_  
City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_



# Will increased working capital mean added profits? Consult Commercial Credit

200 WEST BALTIMORE STREET, Baltimore 3  
222 WEST ADAMS STREET, Chicago 6  
722 SOUTH SPRING STREET, Los Angeles 14  
100 EAST 42ND STREET, New York 17  
112 PINE STREET, San Francisco 6

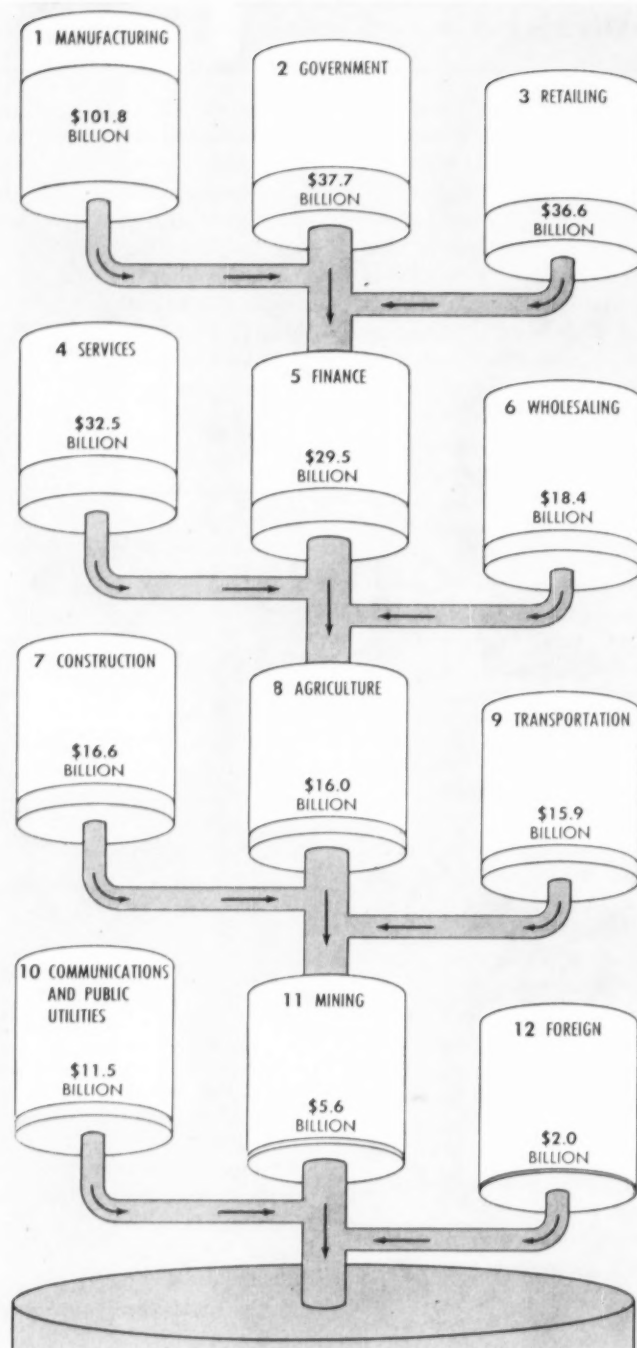
A service offered through subsidiaries of  
Commercial Credit Company, capital and surplus over \$190,000,000

COMMERCIAL CREDIT's method of supplementing working capital usually enables a business to get *more cash* than from other sources, and to get it on a continuing basis, with no need for renewals.

Our method is fast and flexible. Cash is normally available within a few days after first contact, and the amount may range from \$25,000 to millions. The period of use may vary from a few months to years. The one reasonable charge is tax deductible.

More than a billion dollars of our funds are used annually by companies across the nation for working capital purposes alone. For information on how your company can use our method to its advantage, contact a COMMERCIAL CREDIT CORPORATION office listed below and ask for details about the plan described in *Dun's Review & Modern Industry*.

## NATIONAL INCOME BY INDUSTRIAL ORIGIN



### 1955 NATIONAL INCOME \$324 BILLION

Before 1956 was half over, the national income hit an annual rate close to \$340 billion and a further advance in the remainder of the year was expected to push the 1956 total even higher. It is doubtful that the proportionate contribution of each major industrial group will change appreciably in 1956, although the dollar totals for each may be expected to rise.

There have been some striking changes in the relative importance of the various industries over a

period of years. While manufacturing has been the largest single contributor to the national income since 1929, its relative importance has increased from about 25 per cent, in that year, to slightly over 31 per cent in 1955.

The chief gains over the past quarter-century were scored in government, retail and wholesale trade, and construction. The communications and public utilities, and mining sectors have been at the tail end of the list for decades.

**ACCOUNTS RECEIVABLE**

**TRIAL BALANCE & AGE ANALYSIS**

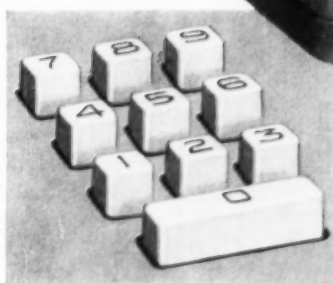
**ACCOUNTS PAYABLE**

**PAYROLL**

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**Underwood Sundstrand gives you complete high-speed, low-cost accounting on one machine!**



Here's a low-cost machine that handles all your accounting. Underwood Sundstrand, with its 10-key touch-operated keyboard, gives you accurate, up-to-the-minute accounting control because it performs so many functions automatically!

When applied to your business, Underwood Sundstrand will speed your record-keeping...put an end to costly errors...do away with overtime...and lower accounting costs. Result: real savings in time and money! For full information, call your nearby Underwood Office or write Underwood Corporation, One Park Avenue, New York 16, N. Y.

*Underwood Sundstrand's famous keyboard with only 10 numeral keys is easy to learn, eliminates "headswing" fatigue. Operators turn out work faster and with greater accuracy.*

**UNDERWOOD**



**CORPORATION**

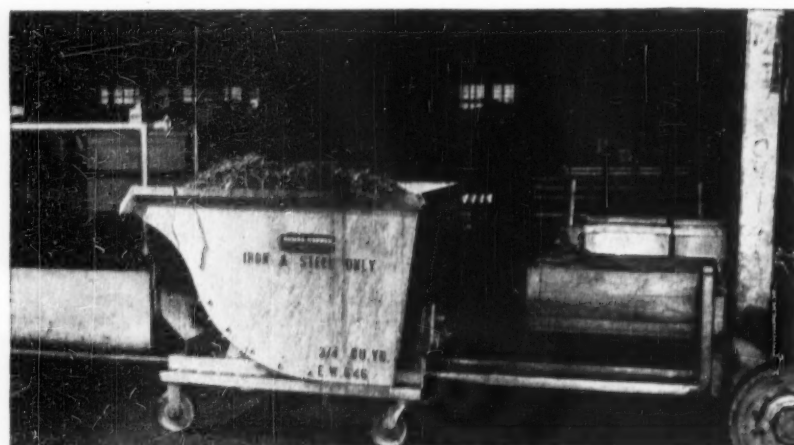
ONE PARK AVENUE, NEW YORK 16, N. Y.





**SAVE TAX,  
CAPITAL, TIME,  
WORRY:**

LEASE your trucks!  
Send for "The Modern Way" brochure.  
Write National Truck Leasing System,  
Dept. DR-9

### Self-Dumping Hoppers permit fast scrap handling

The scrap disposal job is no headache for the Goss Printing Press Co., Chicago. They discovered a way to convert an inefficient salvage operation into a fast, economical scrap disposal procedure. Forty-one Roura Self-Dumping Hoppers, mounted on casters, are located throughout their plant serving as scrap containers. When the scrap-laden Hoppers are ready to be emptied, they are easily

pushed into an aisle. A standard lift truck carries them to a waiting freight car. There, with a flip of a latch, each Hopper dumps itself . . . rights itself . . . locks itself . . . and is quickly returned to its station.

Versatile Roura Self-Dumping Hoppers are cutting costs throughout industry, handling hot or cold, wet or dry bulky materials.

**ROURA**  
Self-Dumping  
**HOPPER**

WANT MORE DETAILS? Attach this coupon to your letterhead and mail to

**ROURA IRON WORKS, INC.**  
1404 Woodland Ave., Detroit, Michigan

## Failures . . .

Dropping 8 per cent in July to 1,018, business failures continued to decline, in accordance with the usual seasonal pattern. Nevertheless, failures were at a post-war peak for the month. The toll was 18 per cent greater than the 861 in July a year ago; this was the seventh consecutive month in which mortality remained above the year-ago level.

In relation to the number of enterprises listed in the DUN & BRADSTREET *Reference Book*, failures continued to climb in July, reaching a new high for the post-war period. Some 49.9 businesses failed for every 10,000 listed names, according to DUN'S FAILURE INDEX. The index projects monthly mortality to an annual basis, is adjusted for seasonal variations. This rate compared with 42 for each 10,000 last year. However, it was far below the pre-war rate of 71 in 1940.

Contrasting with the dip in number of failures in July, liabilities rose 13 per cent to \$48.7 million, a volume half again as heavy as in July 1955. Casualties of all sizes were less numerous than in the previous month, but there was a marked jump in liabilities among failures involving more than a million dollars. In June, four concerns suc-

#### FAILURES BY DIVISIONS OF INDUSTRY

(Current liabilities in millions of dollars)	Number	Liabilities
	7 Months 1956	7 Months 1955
Mining, Manufacturing . . . . .	1414	1309
Mining—Coal, Oil, Misc. . . . .	25	34
Food and Kindred Products . . . . .	125	102
Textile Products, Apparel . . . . .	355	293
Lumber, Lumber Products . . . . .	228	189
Paper, Printing, Publishing . . . . .	66	62
Chemicals, Allied Products . . . . .	36	30
Leather, Leather Products . . . . .	56	51
Stone, Clay, Glass Products . . . . .	23	31
Iron, Steel and Products . . . . .	73	75
Machinery . . . . .	176	172
Transportation Equipment . . . . .	32	33
Miscellaneous . . . . .	219	237
Wholesale Trade . . . . .	746	685
Food and Farm Products . . . . .	164	167
Apparel . . . . .	34	39
Dry Goods . . . . .	27	29
Lumber, Bldg. Mats., Hdwre. . . . .	99	82
Chemicals and Drugs . . . . .	24	17
Motor Vehicles, Equipment . . . . .	41	41
Miscellaneous . . . . .	357	310
Retail Trade . . . . .	3747	3240
Food and Liquor . . . . .	625	630
General Merchandise . . . . .	160	112
Apparel and Accessories . . . . .	717	514
Furniture, Furnishings . . . . .	477	476
Lumber, Bldg. Mats., Hdwre. . . . .	219	181
Automotive Group . . . . .	427	300
Eating, Drinking Places . . . . .	667	593
Drug Stores . . . . .	94	84
Miscellaneous . . . . .	362	330
Construction . . . . .	1006	751
General Bldg. Contractors . . . . .	981	244
Building Subcontractors . . . . .	569	463
Other Contractors . . . . .	56	42
Commercial Service . . . . .	601	502
TOTAL UNITED STATES . . . . .	7514	6487

Liabilities are rounded to the nearest million; they do not necessarily add to totals.



## Step up GOOD-WILL with TOLEDO Courtesy Weighing

In institutions, banks, office and industry lobbies, stores, clubs—wherever public and employee relations count—a modern Toledo Person Weigher becomes your hard-working good-will ambassador. More and more people today are weight-conscious. They appreciate this added service . . . an invitation to weigh themselves daily without the need to reach for small coins to pay for it. They like to step up to this Toledo . . . the best known name in weighing, and get Honest Weight. They like to return repeatedly to a scale that fully merits their confidence. Modern design; handsome gray finish.

It will pay you to investigate the many advantages of a Toledo Person Weigher to increase good-will. Send for bulletin PW 850. Toledo Scale Co., Toledo 1, Ohio.

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Headquarters for SCALES

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PRODUCT OF  
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RESEARCH



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process lets you make perfect copies  
without chemicals or negatives!**

Here is the copy maker that can handle 90% of your office copying!

The new THERMO-FAX "Secretary" Copying Machine is All-Electric . . . and gives you perfect copies *directly from your originals* in just 4 seconds! You copy the things you need copied most—confidential executive material, letters, news articles, memos, orders—right when you need them

most for as little as 4½¢ per copy. Exclusive All-Electric, one-step process *eliminates* chemicals, liquids and negatives forever! Brand new cabinet styling complements any office. Send the coupon below for the name of your local dealer and important details on this money-saving way to speed copying and communications in your office now.



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# NOELTING **Faultless** CASTER MATERIALS HANDLING FACTS

## CASTERED BENCHES REDUCE MANUAL HANDLING DAMAGE

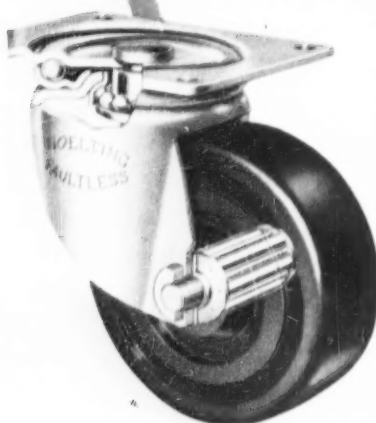


SERIES 900 SWIVEL CASTER

A system of castered work benches has practically eliminated the manual handling of electrical control systems and components being produced at Vickers Electric Division, Vickers, Inc., St. Louis, Mo. These work benches equipped with Faultless Casters and Floor Truck Locks are used to move delicate instruments, during their production and inspection, without the hazard of manual handling.

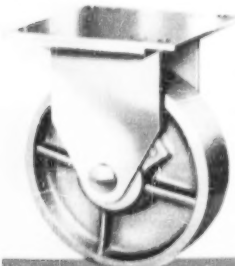
The purpose of the system was to provide a method which eliminated manual handling of the components as much as possible and thereby reduce handling damage and subsequent rejections of manufactured units. Faultless 923-5 Double Ball Bearing Swivel and 9723-5 Companion Rigid Plate Casters are used exclusively on these unique work benches.

We are proud of this Faultless performance for Vickers and yet this is but one of the hundreds of tough jobs Faultless Casters have solved for men in industry. Do YOU have a materials-handling problem? Our experienced engineers will gladly provide you with helpful data, if you simply phone or write, no obligation.



SERIES 900 DOUBLE BALL BEARING SWIVEL TRUCK CASTER

A rugged, all purpose swivel plate caster with two full rows of hardened, ground and polished grade "A" ball bearings rolling around full hardened raceways. Full drawn steel horn formed for surplus strength. Complete choice of wheels to suit floor surfaces, loads and operating conditions. Series 900GS available with Neoprene Grease-Seal retainers, where high temperatures, chemicals or water are encountered.



Series 9700 Medium Duty Rigid Plate Caster, companion to Series 900 shown above.

### FTL ALL STEEL FLOOR TRUCK LOCK

Easiest floor truck lock to operate. You simply step on one pedal to lock—step on other pedal to release. Positive action. No more scuffed shoes from rough cast edges. No more soles torn away from shoe tops. Toe presses down on the Faultless Truck Lock—*the does not lift*. Your help will prefer this safe truck lock. Safety engineers demand them.



A compression spring keeps the friction disc under a steady, predetermined locking pressure.

**FAULTLESS CASTER CORPORATION, EVANSVILLE 7, INDIANA**  
Offices in Atlanta, Baltimore, Boston, Buffalo, Chicago, Cleveland, Dallas, Detroit, Grand Rapids, High Point, Indianapolis, Los Angeles, New Orleans, New York, Philadelphia, Portland, Seattle, St. Louis, Canada: Stratford, Ontario.

cumbered in this size group involving aggregate liabilities of \$5.9 million; in July, five businesses of this size failed, with liabilities of \$17.4 million.

All major industry groups had fewer failures in July than in June. Among manufacturers the toll was the lowest in eleven months, while among wholesalers, it was the lowest in nine months. Several manufacturing industries, textiles, apparel, lumber, leather, iron and steel, had fewer failures during the month, while the wholesaling downturn was concentrated in the food and machinery trades.

In retail trade, a decrease prevailed generally, although the toll among furniture and furnishings stores was the heaviest since January and failures among eating and drinking places climbed to a post-war peak. Construction mortality fell below its record high established in June, with a sharper decline among general builders than among subcontractors.

Neither manufacturing nor wholesaling had as severe a toll as in July a year ago, but retail and service mortality mounted 28 per cent and construction 38 per cent from the comparable 1955 level. All retail trades except drugs suffered heavier casualties. Failures in the apparel line climbed 71 per cent from the previous July, in building materials 52 per cent, and in furniture and furnishings 45 per cent.

### THE FAILURE RECORD

	July 1956	June 1956	July 1955	P.C. Chg't
<b>DUN'S FAILURE INDEX*</b>				
Unadjusted	46.4	48.7	39.1	+19
Adjusted, seasonally	49.9	49.2	42.0	+19
NUMBER OF FAILURES	1018	1105	861	+18
<b>NUMBER BY SIZE OF DEBT</b>				
Under \$5,000	175	193	149	+17
\$5,000-\$25,000	486	505	430	+16
\$25,000-\$100,000	102	122	232	+60
\$100,000 and over	35	85	60	-8
<b>NUMBER BY INDUSTRY GROUPS</b>				
Manufacturing	165	183	179	-8
Wholesale Trade	85	115	89	-4
Retail Trade	540	551	421	+28
Construction	141	163	102	+38
Commercial Service	85	93	68	+28
<b>LIABILITIES in thousands</b>				
CURRENT	\$18,689	\$15,013	\$12,543	+50
TOTAL	48,713	43,293	32,706	+49
*Apparent annual failures per 10,000 listed enterprises, formerly called Dun's Insolvency Index.				
†Per cent change, July 1956 from July 1955.				

BUSINESS FAILURES include those businesses that ceased operations following assignment or bankruptcy, ceased with loss to creditors after such actions as execution, foreclosure, or attachment; voluntarily withdrew leaving unpaid obligations; were involved in court actions such as receivership, reorganization, or arrangement; or voluntarily compromised with creditors out of court.

CURRENT LIABILITIES, as used in The Failure Record, have a special meaning; they include all accounts and notes payable and all obligations, whether in secured form or not, known to be held by banks, officers, affiliated companies, supplying companies, or the Government. They do not include long-term, publicly held obligations. Offsetting assets are not taken into account.

## If You Use Modern Business Machines—

Many office machines use marginal punched forms. And the records you make with this modern efficiency system are valuable. How do you file them?

The best way is to bind them in Acco Pin Prong Binders equipped with special narrow prongs to accommodate the small holes in the record sheets. Your records

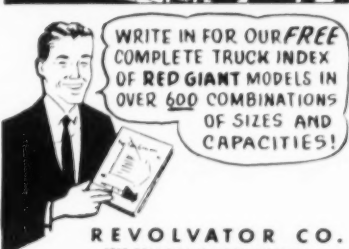
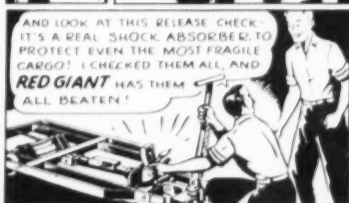
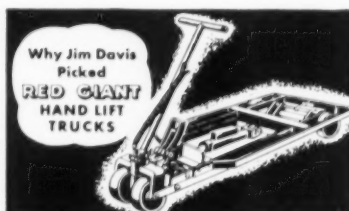


will then be safely bound for temporary or permanent filing—always in order, always neat, always available.

Acco Pin Prong "9000" line of Binders come in many sizes and are available in your choice of genuine pressboard (5 colors) or heavy binder board covered with canvas or black pebble grain cloth. Your stationer will supply you. Ask him.

**ACCO PRODUCTS, Inc.**  
Ogdensburg, N. Y.

In Canada: Acco Canadian Co., Ltd., Toronto



WRITE IN FOR OUR FREE COMPLETE TRUCK INDEX OF RED GIANT MODELS IN OVER 600 COMBINATIONS OF SIZES AND CAPACITIES!

**REVOLVATOR CO.**  
8702 TONNELLE AVE. NORTH BERGEN, N. J.

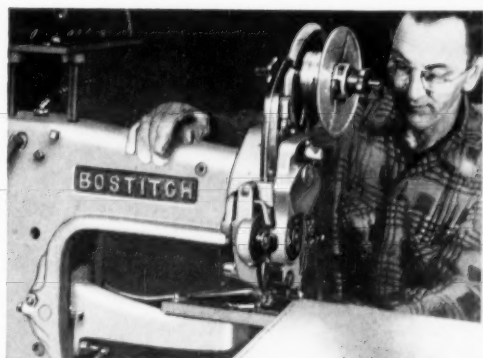


Whatever your business may be...

# you can save money with stapling

Below you see five of the vast number of businesses which report savings with Bostitch stapling. In shipping, Bostitch provides quick, easy carton closures—on seams, tops and bottoms—that actually strengthen the cartons. In production, everything from paper to sheet metal is fastened with Bostitch

equipment—speeding output, cutting costs. A Bostitch Economy Man will be glad to help with your fastening problems. He's one of 350 trained fastening specialists working out of 123 cities in the U. S. and Canada. Over 800 different Bostitch staplers use 200 types of staples, tailored to the job.



These steel freezer cabinets, once spot welded, are now stitched. Says the manufacturer: "Bostitch method trims fastening costs by 75%."



Using Bostitch Autoclench stapler, this man says he seals boxes "five times faster" than he can with glue. Manufacturer's saving "over 50%."



Air freight bills stapled to corrugated shipping containers with new type Bostitch tackler "hold better than with tape at 1/10th the cost."



Roofers use heavy duty Bostitch stapling hammers to lay asphalt shingles on new roofs. "Four times faster than nailing."



"Twice as many boxes can be stapled in an hour, with only two thirds as much manpower," says shipper. Staplers also take up less floor space.



For greatest savings, use only genuine Bostitch staples in Bostitch machines. They're precision-made to work together smoothly and efficiently.

HERE'S HOW TO CUT COSTS in your business; attach this coupon to your business letterhead and mail to us today.

Fasten it better and faster with



BOSTITCH, Inc., 669 Mechanic Street, Westerly, R. I.

Your proposition interests me—show me how stapling can save money for our business. I'm particularly interested in the following applications (please check):

#### HI-SPEED PRODUCTION FASTENING

- ☐ stapling vs. riveting
- ☐ stapling vs. spot welding
- ☐ stapling vs. screws or bolts
- ☐ stapling vs. glue or cement
- ☐ stapling vs. tape
- ☐ stapling vs. tacks or nails
- ☐ stapling vs. solder
- ☐ stapling vs. wire or string

#### PACKAGING and CARDING

- ☐ sealing bags (cloth, paper or plastic)
- ☐ mounting products on display cards
- ☐ fastening items to individual cards

#### SHIPPING ROOM ECONOMIES

- ☐ preparing cartons for filling
- ☐ sealing filled cartons
- ☐ lining or padding crates
- ☐ applying shipping bills or tags

#### BUILDING APPLICATIONS

- ☐ applying asphalt roofing
- ☐ laying underfelt
- ☐ installing ceiling tile
- ☐ applying insulation
- ☐ installing low voltage wiring
- ☐ applying shake shingle siding

#### OFFICE EFFICIENCIES

- ☐ filing
- ☐ routing
- ☐ posting
- ☐ binding folders and reports
- ☐ preparing advertising dummies

Name \_\_\_\_\_

Position \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

Zone \_\_\_\_\_ State \_\_\_\_\_

# ADP\* GIVES YOU AUTOMATION

\*Automated Data Processing by Moore

Automation has developed rapidly and as a consequence many companies feel they want the benefits of automated data processing but are not

sure which way to turn, or which step to take first. Others who want it feel too much expense is involved, and consequently automation must wait.



*The advantage of "composite experience" — The Moore representative has helped in many ADP systems. Behind him are the resources of the largest, most versatile manufacturer of business forms.*

For any company, ADP can supply the right amount of automation. A Moore form-system is the heart of an ADP installation. In all Moore systems, sound principles of forms design and construction are applied, for efficiency and also economy of operation.

Moore does not make ADP machines, but forms only. In some cases an entire system is overhauled; in others ADP is introduced on a 'walk before you run' basis. This gives automation a larger role only after it fits itself in and proves its advantages.

## **How Speediflo made paperwork speed up**

*As the first step in planning for ADP throughout the company, automation has been applied to the Purchasing procedure.*

**See case history on facing page →**

# ALL AT ONCE OR IN PLANNED STAGES



**Traveling requisitions**, a specially designed Moore product with a built-in envelope to hold the pre-punched item description tapes, are pulled from the file and forwarded to a central Purchasing location.



**From Vendor codes** on traveling requisition, Purchasing selects a pre-punched vendor tape and the typist uses both tapes for automatic production of Moore planned and designed Purchase Orders.



**As a by-product** of the typing operation, an output tape captures vendor and item codes, quantities and prices. This tape automatically produces punched cards for running statistical and 'stock-on-order' reports.



**As experience** is gained, this system will be expanded to automatically handle receiving records, accounts payable voucher checks, and all accounting within the purchasing system cycle.

## SPEEDIFLO IS THE HEART OF ADP BENEFITS

The new multi-part continuous form designed by Moore offers many operating advantages. Narrow carbon paper allows faster feeding with no bulk to hinder smooth, continuous operation. Pins are free with no carbon to burr or clog, thus causing 'down' time. Precision register of parts permits faster running.

Moore will design a form or a whole system to improve the efficiency of an office and speed its work flow. Any company, large or small, can enjoy practical ADP benefits by talking with the Moore man. He's in the Classified or can be reached by writing the nearest Moore office, below.

## MOORE BUSINESS FORMS Inc

NIAGARA FALLS, N.Y. • DENTON, TEXAS • EMERYVILLE, CALIFORNIA

Since 1882 the world's largest manufacturer of business forms and systems. Over 300 offices and factories across U.S. and Canada.



Moore's new dependable Speediflo





Salt Capital  
to Salt Water...  
MANISTEE to the Sea!



## MANISTEE, MICHIGAN

Manistee is one of several excellent deepwater ports on the Great Lakes-St. Lawrence waterway in Outstate Michigan.\* Known as the "salt capital" it bears the name of a famous trout stream which flows into its harbor.

The protected harbor, Lake Manistee, is connected to

Lake Michigan by a 3,600-foot channel 300 feet wide. Ships can sail from Manistee via the waterway to any port on the seven seas.

Manistee is a city of 10,000 with many times that number within easy driving distance. Widely known hunting, fishing and resort areas are close by, and the beautiful Manistee National Forest is the city's playground.

Besides common salt, Manistee produces industrial chemicals, insulating box board papers, machine tools, clothing, shoes, drop forgings, furniture, pleasure boats and core sand. Chemical brines high in magnesium and calcium chloride underlie Manistee and form the basis for important industrial chemical production.

Manistee is an ideal site for an industry or a branch plant. It is a good port city in Outstate Michigan's splendid vacationland where industry thrives and people really enjoy living.

Outstanding industrial sites are available. For further information contact our Industrial Development Department.

*\*Others are Bay City, Saginaw and Cheboygan on the Lake Huron side, and Muskegon, Manistee, Frankfort, Traverse City, East Jordan and Boyne City on the Lake Michigan side.*

**CONSUMERS POWER COMPANY**  
JACKSON, MICHIGAN

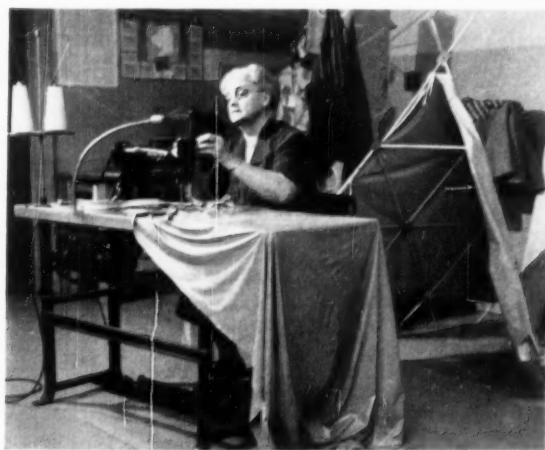
Serving 3,500,000  
Outstate Michigan People



Retired draftsmen and engineers find satisfaction in machine design work for Chicago manufacturers—work that is needed but was pushed aside for urgent jobs.



Skilled woodworker keeps his hand in and adds to his income by filling small-quantity orders for toys and furniture in well-equipped Senior Achievement shop.



Women members do production as well as clerical jobs. This alert lady is a retired machine operator with many years of experience, turns out excellent work.

## SENIOR ACHIEVEMENT

### makes longer lives happier

TO SOME, retirement is a welcome relief from the daily grind and a chance to pursue long-neglected hobbies, visit grandchildren, or see the world.

But to many, it is a trapdoor that leads only to rapid decline—mental, physical, and economic. Under Secretary of Labor Arthur B. Larson said not long ago that "only about 5 per cent of the older workers retire voluntarily while in good health." Yet more and more companies are putting in retirement plans, and our lengthening life span means that an increasing number of people are living to and beyond retirement age.

What's the answer?

Extension of the retirement age is one obvious solution—but perhaps not always a practical one.

Pre-planning for retirement can help ease the change; but provides no real solution for many.

The best answer would seem to be: Find jobs—perhaps not full-time work, but valuable, useful jobs, for those retirees who can work and want to do so.

Several such work plans have been tried, with some success, in various communities. But it remained for a group of industrialists in Chicago to develop a system that not only works but can readily be adopted by communities across the country. They call it *Senior Achievement*.

Senior Achievement is a non-profit organization that provides useful but non-competitive work for retired men and women who want to feel useful and earn money to add to their modest incomes; yet who can not or do not need to work full time.

Sparking the organization of Senior Achievement were top executives of such companies as Acme Steel, Inland Steel, Phoenix Finance, Kuppenheimer, and Sears, Roebuck. To get the project started,

about \$30,000 was contributed by the companies and the Weiboldt Foundation. This provided the money for a headquarters. Then, the executives themselves went out hunting for work the oldsters could do.

One auto plant found it had a number of small but important drafting jobs that had been put aside owing to the pressure of other work.

A department store wanted a few items of furniture for a display.

A ceramic company needed wood frames for pattern work.

Sears, Roebuck itself found it needed several metal products in quantities too small for a regular supplier to handle—and Senior Achievement got the job.

The organization is so set up that each employee can work at a leisurely rate, generally about four hours a day, with no individual earning more than \$100 a month. That way Social Security payments are not jeopardized.

Clerical workers are also handled by Senior Achievement, using a system that greatly simplifies the problem of part-time workers for the user-company; Senior Achievement "lends" its workers to those who need them, receiving a fixed fee for the job. Then, Senior Achievement pays the worker, thus freeing the employer from Social Security book-keeping and other accounting problems.

Do the oldsters like Senior Achievement? It's been swamped with applicants since the day it opened its doors, and is now planning to open half a dozen branches in the Chicago area. Those who use its services like it, too, and are helping to put it on a self-supporting basis.

How about organizing a similar group for the senior citizens in your community?

A. R. G.

# THE FRONTIERS FOR BUSINESS MEN

BUSINESS LEADERS gifted with a sensitivity to the influences around them are aware of impending change. To be sure, change is constant, with the pulse of supply and demand, with the rise and fall of the rumors of war, of shifting populations, and the whims of the consumer.

But the change impending is of a long-term cyclic nature, a change that is deeply rooted in the struggle of the material and the spiritual, a change that enlarges the managerial and technological attitude toward public questions, a change that involves our concept of the profit system and the whole program of rewards for labor and management in our complex economy. These shifts alter no principles of human conduct, but intensify the need for better understanding of them in the confusion of events reaching into world politics, sociology, and economics.

Invention has given us the benefit of power tools and research has shown us how to use the resources of nature. Rapid transport and almost instantaneous communication have enlarged the scope of action of the individual. Improved technology has provided a uniform high standard of living with little to distinguish in apparel, or to separate in creature comforts, the man or woman with an income of \$5,000 or \$50,000. Standardization in factory methods, with its mass production, assembly lines and automation has reduced physical labor, eliminated hand craftsmanship, and has tended to narrow distinctions in productive skills. Standardization in education has lifted the average in literacy at the

expense of the talented with a tendency toward a high level of mediocrity. Standardization in recreation has reduced the number of participants and increased the number of spectators with some cultural loss that belongs to self-expression.

The democratic system providing equal suffrage has eliminated most of the inequities of class rule, but democracy itself can be a fickle and ungrateful master when it ignores or pushes aside the devoted public servant. The tax laws are often punitive and restrictive to men of enterprise and tend to limit their curiosity and divert their energies.

It is this diversion of talent which is of most significance to men who sense a new order of things. Men are beginning to ask the question—What is the ultimate benefit, or usefulness, of my business, my trade, my career? Is it material benefits only?

Profits are necessary to survival, and dividends feed the bloodstream of the economy. Profits are a test of management qualifications. But are profits the means or the end? What happens when profits, income, or salary is no longer an incentive? Is there a period when the appreciation of selfless labor is of greater personal worth than the tangible coin of the realm? The questions are of equal significance to the corporate and individual conscience.

Many American business men, with no lack of enthusiasm for their mercantile or industrial objectives, recognize their larger responsibility to our society in which commerce is so lively a factor. They approach the new frontiers with

a speculative attitude of caution and wonder.

The area for dedicated action in behalf of humanity in general, and the community in particular, is broad and endless. It is as broad as the need for world amity through the exchange of ideas as well as merchandise. It is as endless as time and the flow of humanity. It is a region that invites men who have achieved material success, but in no sense spurn the rewards of their labor; men who are not content to sit back, to ruminate and rust when there is work to be done that cannot be measured in dollars or real estate.

They look to another set of values which are of equal or of superior importance. These include service to the community in its social welfare; service to the teacher more concerned with the distillation of experience into wisdom than with the mere acquisition of facts; service to the young in age and vision, such as junior achievement; service to the young in spirit but mature in judgment, such as senior achievement; service to family and self in reading, recreation, and travel, all of which offer rewards for mental enterprise in the hours of productive leisure.

There is always room for competition in any field—even in the effort to serve our neighbor at home or abroad. One need not be the professional “do gooder” to appreciate this in our own day of narrowing horizons. Management recognizes its responsibility as it stands at the threshold of prodigious change in the affairs of men.

*The Editors*



*How does an oil company  
prepare men for  
industrial technical service work?*

## Here's how Standard Oil trains its men

At the Standard Oil training center on Chicago's south side—not far from the Company's refinery and research laboratory at Whiting, Indiana—men who have demonstrated an aptitude for such work are given a 17 week course in industrial lubrication, equipment maintenance and metal working. And thus begins the training Standard Oil gives its men who are to provide customers with lubrication technical service.

Most men selected for this Sales Engineering School have college degrees in some engineering or scientific field. And in most cases these men, prior to attending the school, have had field experience in industrial technical service work to start them off with an appreciation of the problems industry meets in lubricating equipment and working with metal.

This course for lubrication specialists and engineers includes lectures and work in chemical labora-

tory, engine laboratory and machine shop. Senior Standard Oil men, recognized authorities on lubrication and metal working, are the instructors. Other Standard Oilers with teaching skills and years of field experience, direct the shop work and supervise the school's laboratories.

Class, shop and lab work are augmented by field trips to plants where "students" learn first-hand more about the lubrication problems confronting industrial customers.

The Standard Oil Sales Engineering School has graduated 15 of these classes. The many men who have completed the course are now serving customers out of Standard's 23 offices in fifteen Midwest and Rocky Mountain states. Would you like one of these men to call on you? Then telephone your nearby Standard Oil office. Or write, Standard Oil Company, 910 S. Michigan Ave., Chicago 80, Ill.

*Lectures, shop and lab work comprise training course.*



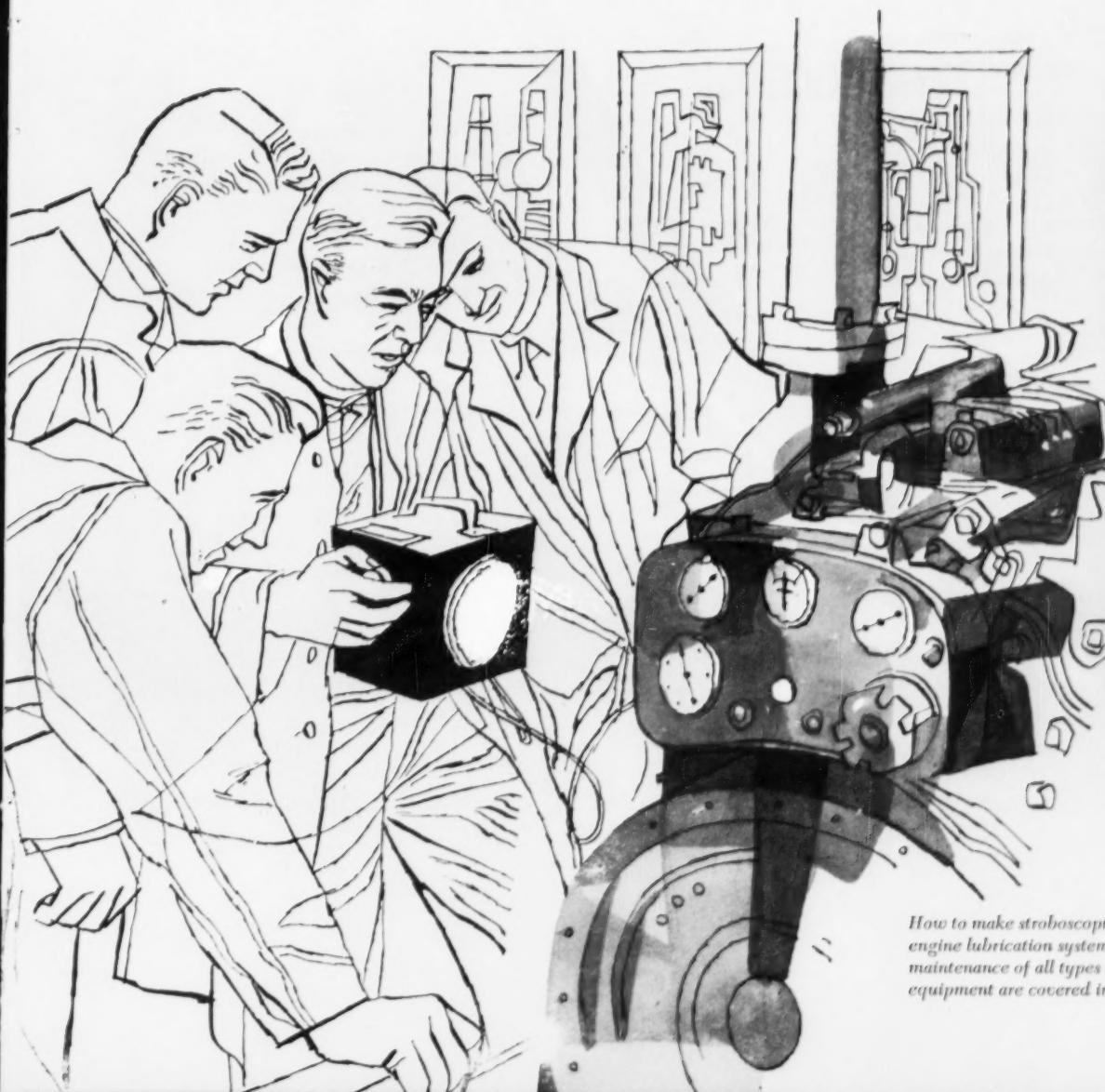
**STANDARD OIL COMPANY**  
(Indiana)



*Testing and comparing bearing lubrication methods.*



*Kinematic viscosimeter is used to test viscosity of lube oil. C. S. Brown (above) learns to run test. Brown, like many classmates, has science degree.*



*How to make stroboscopic examination of diesel engine lubrication system is demonstrated. Operation and maintenance of all types of industrial and automotive equipment are covered in curriculum.*







CARROLL M. SHANKS

**EDITOR'S NOTE:** *There are strong but divergent opinions whether variable annuities should be made available to the public through insurance companies. Mr. Shanks, a firm advocate for lifting legal restrictions, presents his side of the controversial question. The editors hope that this will provide information to stimulate the thinking of those who agree or disagree with Mr. Shanks' convictions. The author initially entered the legal profession and was admitted to the New Jersey and New York bars. He later turned to education, holding posts in the Law Schools of Columbia and Yale, before joining the Prudential where he became president in 1946.*

## DO VARIABLE ANNUITIES MEET THE NEED?

CARROLL M. SHANKS

*President, The Prudential Life Insurance Company of America*

**va'ri-a-ble an-nu'i-ty** 1. an annuity providing a life income not of a fixed number of dollars, but of variable amounts keyed to an underlying common stock investment portfolio.

**F**OUR YEARS AGO the New York Legislature made possible the issuance of variable annuities to college teachers in all states. Over 25,000 college personnel countrywide already have this type of retirement plan. We are asking the New Jersey Legislature to make possible the sale of variable annuities to those others in the general public who want to buy them. We propose to issue them both to individuals and as group contracts covering employee pension plans.

The pertinent issues are the same as those which were studied and decided in setting up the plan for college teachers:

1. Is there a problem?
2. Has anyone thought of a better way to try to meet that problem?

The problem results from the impact of cost of living changes on the income of retired persons. A person receiving a \$2,500 pension in 1940 would by 1951 have had to receive \$4,500 to have the same purchasing power.

It is our belief that the life insurance industry as a whole has a responsibility to cooperate with the initiative, thrift, and self-reliance of the great

mass of average people to provide them with security plans. It is part of that responsibility to expand and modernize our service in the annuity field—a field which has traditionally represented a great specialized sphere of the life insurance companies.

Our advocacy of variable annuities stems from the dilemma of many persons now retired on individual or group pension plans. Annuity incomes that seemed adequate when purchased years ago to-day often fail to meet the buyer's needs, primarily because of the impact of inflation on the purchasing power of the dollar.

Prudential believes in the continued need for fixed dollar annuities and insurance policies and will go on stressing them, because nothing else can give such solid protection against loss of income. But we also believe in the need for variable annuities to supplement fixed dollar annuities or other sources of fixed amount retirement income. Historical studies indicate that this type of combined plan would have provided a fairly constant amount of purchasing power. We are convinced that the variable annuity proposal offers the best chance of meeting the problem presented by the impact of cost of living changes on long-term retirement plans. No one has been able to suggest a better answer to the problem.

An individual's annuity plan may very well be in force for 40 or 50 years or longer. The accumulation period up to age 65 may last for 40 or 45 years and the actual period of retirement may be 20 or 30 years.

The following observations made in the recently published Annual Report of the United States Steel Corporation are worthy of serious appraisal:

"Of great importance to industry and hence to U. S. Steel is the development of what appears to be a permanent and alarming peacetime trend of cost and price inflation. During the war period, 1940-1945, U. S. Steel's employment costs per employe hour increased at a rapid rate. But in the ten years since 1945 there has been an uninterrupted and even greater rate of inflation in this cost. Over the whole period, 1940-1955, the average annual increase is 8.0 per cent compounded. . . .

"Since it is impossible for output per employe hour to be increased at anything like these rates it has been necessary from time to time—as competition permitted—to raise steel prices and thereby pass on to buyers of steel part of the underlying cost of inflation. . . ."

Long-term trends are the ones that count in thinking about retirement plans. The fact that some might guess that there won't be much more inflation in the next year or few years doesn't really have much bearing. Also, in thinking of a long-term variable annuity plan the day-to-day or month-to-month performance of the stock market isn't the test. The real test is whether we believe in the long-term future of our great productive enterprises. There is certainly nothing very radical in suggesting that our retired people should have a chance to participate in that future.

Such people in the securities business as oppose



this proposal don't even claim they can use the variable annuity approach to the problem. Unless they become life insurance companies, they can't use the annuity principle of guaranteeing to spread a principal amount and its earnings over a full lifetime.

But they assume that if life insurance companies begin selling this new coverage it's going to mean competition. So even though they should be our top apostles of private enterprise and free competition they are turning heaven and earth to have this new idea suppressed by governmental action. The opposition doesn't want to seem to be against progress and so they continue to try to dignify their efforts to suppress competition by talking about federal taxes and federal securities regulation.

### State Regulation Ignored

Their talk about regulation completely ignores the far-reaching and effective regulation of insurance companies by state governments. Apparently they have fallen victim to the philosophy that all governmental regulation of business must be centralized in Washington.

We feel there is no justification for treating variable annuities as "securities" subject to Securities and Exchange Commission jurisdiction. Even if it should be held by the courts that variable annuities, as we plan to issue them, are subject to SEC jurisdiction, it would not alter our plans to go ahead. We would then comply with SEC requirements just as we now comply with all laws to which we are subject.

The Federal Securities Law expressly and quite properly exempts annuity contracts. As long ago as 1951 a leading text-book writer on life insurance, Mr. Joseph MacLean, wrote that a variable annuity "is properly classified and defined as an annuity contract."

The New York Insurance Department has approved the variable annuity contracts issued by the College Retirement Equities Fund. In the District of Columbia and in Arkansas the Insurance Departments have recognized that variable annuities are annuities by licensing new life insurance companies, without new legislation, to specialize in writing variable annuities. The National Association of Insurance Commissioners in its extensive report on the subject last year did not indicate any question whatever that variable annuities are annuities. The Treasury Department in Washington has repeatedly ruled that variable annuities are annuities.

A number of leading employers have already set up private, uninsured variable annuity plans for their employees. These include: Bristol-Myers Company, Warner Lambert Company, Jersey Central Power & Light Company, New Jersey Power & Light Company, Long Island Lighting Company, Chemstrand Corporation, Boeing Airplane Company, Pan American Airlines, and Delta Airlines.

Two of the leading New York Stock Exchange firms have set up such private variable

annuity plans for their own employees. The leading article in the July 1954 issue of the New York Stock Exchange Magazine was devoted to one of these plans, that of Kidder, Peabody & Co. It was written by the managing partner for that firm. Here are a few of the statements in that article:

"Pension plans which promise only a fixed number of dollars, rather than aiming at a stable purchasing power, contain an inherent flaw because the history of our country records so many periods of what might be called 'controlled inflation.'"

"It is my deep conviction that a balanced retirement plan, recognizing the possibility of both inflation and deflation, is an important step in solving this problem. Such a balanced

### ON THE OTHER HAND . . .

The proposal that variable annuities be a generally accepted form of insurance is decidedly a controversial matter. This article presents only one side of the question—that favoring the proposal. There are many who hold opposing views and it is the intention of the editors to include statements on the other side in the following number.

plan pays part of a pension in a fixed number of dollars; the other part in a fixed number of units in a common stock trust fund, which may increase or decrease in value with investment experience.

"In fact, our firm—an investment house and a member firm of the New York Stock Exchange—has adopted such a plan, following the ideas worked out by the Teachers Insurance & Annuity Association. We believe that many other firms and businesses will be influenced by the reasoning that led us to adopt a balanced retirement plan.

"If we are correct, then here is an important and exciting development—one of great significance to the nation's business enterprises and to employers and employees alike, and incidentally to the securities industry."

Some people seem to have the impression that the SEC "approves" securities issues and guarantees to the buyer that he is getting a good investment. Quite on the contrary, it is a criminal offense to state that the SEC has "approved" a security registered with it, and every SEC prospectus must so state on its face.

What the SEC does is to require "full disclosure." It says the prospectus must reveal the pertinent facts. It doesn't say that the investment is a sound one.

At the hearing before the "Fulbright Commit-

tee" (U. S. Senate Committee on Banking and Currency) in March 1955, Mr. Harold E. Wood, Chairman of the Board of Governors of the National Association of Securities Dealers, Inc., was asked about a particular SEC prospectus and asked if he would call it a reasonable promotion. Here is his reply:

"No; of course I wouldn't. Of course, that is all covered, Senator Fulbright, by full disclosure, and when the issue is registered with the SEC and there is a full disclosure, they are helpless and we are helpless to do anything about that."

The Chairman then asked: "Do you think that is a healthy situation to be in—that you are helpless under these circumstances?"

Mr. Wood replied: "Well, if you do anything else, though, than require a full disclosure, you are getting into a paternalistic situation."

Here is some more testimony from that hearing:

The Chairman: "In other words, the existence of the SEC is used by such people for the exactly opposite purpose—that is, to assure that the stock is good because it is registered with the SEC. I am afraid a great many people consider that is some assurance."

Mr. Wood: "And yet, of course, on every prospectus, on the front page, as you know, is the legend that they do not pass upon the quality of the issue at all. . . ."

### People Don't Read

In the same hearing Mr. Wood made this statement:

"When you come to the question of prospectuses there is also the problem that people just do not read them."

In *The New York Times* of November 3, 1955 the following appeared about the testimony of Mr. Keith Funston, the President of the New York Stock Exchange, at another hearing before a Congressional Subcommittee:

"Mr. Funston appealed for rules to allow simplification of offering circulars. It is not part of the job of the SEC, he said, to tell Americans where they can invest their money.

"If some Americans refuse either to read or believe the true facts about an enterprise and persist in throwing their money away, then their losses are the price we must pay in a free society for the right to invest or speculate as we please."

The situation is much different when it comes to the approval by State Insurance Departments of insurance policies and annuity forms. The pending New Jersey variable annuity legislation would give to the Department of Banking and Insurance the broadest type of regulatory power not only over the variable annuity contract forms, but over advertising and sales methods. The Department must pass not just on whether the facts are disclosed, but on whether the variable annuity contract is just, fair and equitable. In other words, it must pass on the substance and the content of the contract and not just on its form. Even people who "refuse either to

read or believe the true facts"—to quote Mr. Funston—are protected by this state agency. The insurance company can't issue an unfair variable annuity contract just by putting down all the drawbacks in a technical pamphlet called a prospectus which—according to the Chairman of the National Association of Securities Dealers—"people just do not read."

The complex actuarial arithmetic on which annuity contracts are based dramatically illustrates how far from being a security a variable annuity is and how far it is from being the type of contract that the federal securities regulatory people have any training or experience with.

We can see how unrealistic the demands for federal regulation are as to the individual contracts. But think of the group contracts on a variable basis covering qualified employee pension plans. What do the federal regulatory authorities know about that whole complicated specialized field of insurance operation and regulation? Are they going to hire a whole staff of actuaries and insurance experts to tell us how to write our group plans?

The whole idea seems particularly ridiculous when we bear in mind that a big part of the "trusteed pension plan" competition insurance companies face in the pension field is not subject at all to the far-reaching regulation life insurance companies are under in their group annuity operations. Does it make sense to say that a trusteed variable annuity plan doesn't have to be regulated at either the state or federal level, but that if a life insurance company does the same thing it has to be regulated "at both levels?"

### Annuities and Taxation

There is no unfair regulatory advantage and no unfair tax advantage here. As a matter of fact, we are satisfied that after variable annuities are being issued generally the mutual fund salesmen will be claiming that their product offers a tax advantage, just as they are already doing with the shares of the so-called "Canadian domiciled" mutual funds that are being sold in this country—in fact almost exclusively in this country.

Investment companies pay only a negligible amount of federal income tax. Most pay nothing whatever. In 1954, 63 of the 68 principal American investment companies paid no federal income tax. Three paid a total of \$11,986 in capital gains taxes on realized and retained capital gains, while two made provision for capital gains taxes in the amount of \$464,056 on realized capital gains which were not distributed to shareholders at the end of 1954.

The special, favorable tax provisions available to mutual funds are explained on the ground that such funds act as "conduits" and pass on earnings and realized capital gains to their shareholders. It should be noted, however, that in other situations corporate recipients of dividend income do not achieve comparable total exemption from tax impact when they pass on such

income currently to their shareholders. Fire insurance companies are just one example. It should also be borne in mind that during an annuity pay-out period income on the annuity assets is taxed to the issuing company although amounts attributable to such income are being currently passed on to the annuitant, who is also subject to current tax. An annuity pay-out period, during which this double taxation is operating, may well extend over 20 or 30 years.

Under the new tax law which became effective for 1955, the tax to a life insurance company on any dividends received on common stocks—which would be the predominant source of income in a variable annuity operation—was in effect increased by 700 per cent. The effective rate of 7.8 per cent is the same as that paid by non-financial corporations on dividend income they receive.

The tax situation of mutual fund shareholders reflects familiar constructive receipt principles, just as is true if an individual chooses to set aside funds for retirement in a bank savings account rather than through a life insurance company annuity. In such case he would always have immediate potential use of his income and so would pay income tax on the interest currently.

### Postponed Impact

In the case of an annuity any earnings are immobilized, for they are committed to the long-term program and the tax impact on the participant is postponed. It is extremely important to bear in mind that, while this impact is postponed, when the pay-out period begins, capital gains treatment is not available to the annuitant. He must pay at ordinary rates and there is an income tax impact at these ordinary rates even in the event the annuitant dies, if the value of the interest passing on to his beneficiary or es-

tate exceeds what he paid in. There is, of course, no comparable income tax impact in the event of a death in the mutual fund basis of operation.

A major portion of the proposed Prudential variable annuity operation will be on a group basis, implementing in many instances qualified pension plans. It should be borne in mind that in this important field life insurance companies are now competing for this pension business in the face of a tax advantage now provided to uninsured plans operating on a qualified basis and paying no federal income tax on investment income or other earnings and no state premium tax. (Moreover the tax law applicable to these uninsured plans does not involve passing on a tax impact to the individuals covered.) There is a growing use of common trust funds and mutual fund shares for these uninsured pension assets and also discussion (although we would question its legality) of pooling mortality of a number of pension plans operating with a common trustee.

From time to time statements are made that a "rich man" could use a variable annuity as a "tax shelter" to postpone income tax impact until his retirement years. These statements invariably ignore such factors as the income tax impact at full rates in the event of an annuitant's death during the accumulation period. An annuitant starting payments toward his contract at age 35 has one chance in three of dying before 65 with a resultant income tax impact on his estate.

As a matter of fact such a tax postponement is available, with none of the many tax drawbacks of annuities, through mutual funds. At least seven mutual funds, owned in and operated from the United States, operate under Canadian incorporation pursuant to a plan whereby neither the fund nor the investor pays currently

*Continued on page 108*

The annuity check based on a common stock portfolio that varies generally with economic trends may come closer to meeting immediate needs than a rigid income that fails to reflect business conditions.





A new look at . . .

## STATE MANUFACTURERS' ASSOCIATIONS

*Potent, but not too well known, these local spokesmen for industry have changed a lot in the last quarter-century and are due for a more important role in the future.*

ALFRED G. LARKE  
*Employer Relations Editor*

**E**VENTS are conspiring to focus more attention on the state manufacturers' associations, probably the most eager of the organized heavers working for industry's immediate interests.

A sort of stalemate between labor and management in the national legislative field has produced increasing evidence that future contests will be played or fought out in the state arenas, more than in the national capital.

For one thing, industry—consistently drubbed in Washington during the New and Fair Deals—retreated to the state legislatures as having more hospitable ground rules. For another, organized labor, no longer able to do better than hold the line in Congress, also appears resolved to make the big fight in the state capitals.

This trend is especially noticeable in connec-

tion with "right-to-work" laws, workmen's compensation, and the adaptation of state unemployment compensation laws and regulations to supplemental unemployment benefit programs.

The federal government's current tendency to pass back to the states the responsibility for many labor matters has also emphasized the role of the states.

Ready and willing to do battle for the managements of manufacturing industries are a group of autonomous but closely co-operating in 38 states, known in some areas as manufacturers' association, in others as associated industries. The oldest, the Illinois Manufacturers' Association, was founded in 1893; the newest, the Mississippi Manufacturers' Association, was organized in 1951 and got its first full-time executive in 1954.

Although each state association is independently controlled by its own membership and board of directors, all are affiliated with the National Industrial Council (NIC), a service organization in the nation's capital, which in turn is sponsored by and affiliated with the National Association of Manufacturers (NAM).

The NIC performs a similar national service function for two other groups—local manufacturers' organizations and nationwide trade associations. The local groups differ from the state organizations not only in covering a smaller area but also in emphasizing industrial relations problems of their member companies and sometimes furnishing experts to conduct negotiations. The trade associations act at all legislative levels, but for a more limited variety of companies.

State manufacturers' associations, through the



NIC, nominate three of the NAM's board of directors, and their representatives sit as non-voting delegates on NAM conventions. The NAM foots about 85 per cent of the cost of the NIC.

Most state manufacturers' associations were established just before World War I or in the 1920's. Their methods have varied from state to state, from their very beginnings, but in general the early emphasis was almost entirely on legislative lobbying.

Interests, methods, and activities have broadened greatly in recent years, but keeping an eye on legislation is still a major concern. This fact is evidenced by the location of the associations' headquarters: 24 are in state capitals, and of the other 14 organizations, several maintain a full-time branch office in the state capital, and others set up temporary offices there during legislative sessions.

Unions have probably been more aware of these management associations than have a good many management men. This may account in part for the occasional picture of a manufacturers' association as purely a cloak-and-dagger lobbying outfit. The associations have contributed to the picture, too, however.

One of them, for instance, still circulates a reprint of a newspaper article which tells what an alert and progressive outfit it now is, but which also relates that the organization "back in the '30's had the reputation for being a lobbying outfit with plenty of cloakroom savvy."

Times change, however, and institutions change with them. The typical legislative activity of to-day's association is to identify for members those bills—among thousands proposed—which would affect industry if passed; to analyze and summarize them, and to mail out to members a periodic legislative bulletin. Between sessions, a similar watchful eye is kept on the doings of administrative boards and bureaus.

This is no small task; the California Manufacturers' Association had 6,000 bills to scan in one recent legislative session. About one-third of them affected the interests of manufacturers.

Once alerted, the members may, if they are interested, call on their state legislators locally, either as individuals or in committees. There is no sure way of measuring effectiveness, but there is little doubt that this kind of communication with legislators in their home bailiwicks is much more effective than any purely professional lobbying could be.

When the manufacturer, whose plant furnishes jobs for dozens or perhaps thousands of a legislator's constituents, takes the time to call in person, his interest is bound to be more impressive than the most persuasive efforts of an agent in the state capital.

The change in industry's way of letting its opinions be known has had two good effects. The staffs of the state associations have been able to improve their job of analysis and reporting. The legislative reporting, especially of the associations that have adequate support of

their members, has become highly professional.

Moreover, industrialists who get themselves involved in the democratic process, even to the limited extent of becoming better acquainted with their state senators and assemblymen, get an education in the best sense of the word. The complexities of legislation and politics come through much more clearly and realistically than they ever did when it was the policy to "let George do it."

This development has made it much easier for association executives to persuade their members to take the advice that a Florida legislator several years ago gave to William F. Jibb, executive secretary of the Associated Industries of Florida: "For Heaven's sake, be for something—stop being against everything."

John C. McCurry, general manager of the Michigan Manufacturers' Association, says this: "I think it describes the situation best to say that industry's leaders have become more aware of their responsibilities to the community and are developing new ways to discharge them."

There is no doubt that the manufacturers' associations have learned something from the unions, too. Some of them, for instance, put out primers on the legislative process and on how to meet and talk to a legislator most effectively, which are remarkably like the pamphlets and booklets some unions have put out to help their members win votes and influence legislators. The Texas Manufacturers' Association publishes one entitled, "How to Be Influential in Politics."

Others, like the Associated Industries of Kentucky, supply members with seating charts of their legislative houses, with names and both capital and home addresses of legislators. The Pennsylvania Manufacturers' Association, shocked to discover that 30 per cent of white collar workers were not registered to vote in 1952, developed a "Keystone Plan for Active Citizenship," which saw the state achieve a new high in number of voters that year and another record of 86 per cent of registered voters casting ballots. The plan, which is operated mainly through communications to supervisors and other key personnel and is carried out in co-operation with trade associations and farm groups, won several national awards and was continued in succeeding years. Other states have adopted it.

Even with the increased emphasis on good legislative reporting and political education of key people, the most remarkable development in the state associations has been in other directions. The programs vary greatly from state to state. Here are just some of the activities pursued in one or more states:

**Insurance.** A great many associations offer group insurance for members' key personnel—those not covered by group insurance plans embodied in labor contracts, or for situations where the company-member may want to give greater coverage for key people than is afforded by the plant-wide policy.

The Manufacturers' Association of Michigan has recently made "major medical" expense in-

## Variety marks activities of state associations

State manufacturers' association activities are as varied as their members' needs and interests, as evidenced by this random representation. Every three months, executives of state organizations exchange ideas and problem solutions at NIC meetings (1), at home, other representatives may be arguing freight rates before a public service commission (2), members may be taking off for Washington dinner with Congressmen (3), or for trade prospect tour in Europe.



Wisconsin's Bob Ewens addresses NIC meeting.



WMA Counsel Philip Porter argues freight rates.



They're off to see the wizards—of Washington.



Massachusetts goodwillers sail for Scandinavia.

insurance available for members' key personnel.

The New Jersey Manufacturers' Association, through an affiliated company, operates industrial clinics in key centers.

The Pennsylvania group has its own affiliated fire and casualty companies, which underwrite fire, workmen's compensation, and automobile risks.

**Representation on Official Boards.** In some states the manufacturers' group nominates industry representatives to official state bodies. Thus, in Wisconsin, employer representatives to an advisory committee to the state labor commission are selected by the Wisconsin Manufacturers Association. These management members two years ago were able to work out with representatives of the state's unions an agreement on workmen's compensation act amendments to meet the loss-of-hearing problem that arose under that state's compensation policy.

Similarly, the Workmen's Compensation Committee of the Illinois Manufacturers Association managed to work out an agreed plan for workmen's compensation act amendments in that state, on a voluntary basis.

In many other cases of bipartite or tripartite semi-public bodies, the state manufacturers' association is looked to for nominations.

**Labor Relations.** Although the state groups do not furnish negotiators to smaller members, as many city-wide associations do, they nevertheless aid in such negotiations by publication of bulletins on labor developments, by holding training conferences on human relations and other relevant subjects, and by conducting wage surveys.

The Virginia Manufacturers' Association, for example, publishes an Album of Labor Contracts. Associated Industries of Kentucky conducts a state-wide wage survey; Associated Industries of Missouri conducts such surveys in two major employment areas annually and is planning to conduct them in two others. The Associated Industries of Massachusetts has published studies on such subjects as wage trends, labor relations patterns, cost of fringe benefits and pre-

mium pay. Vermont established a successful labor-management mediation board.

**Member Service and Education.** One odd and growing development is the publication of "swap" or "exchange" lists. Wisconsin's association estimates members have sold or swapped \$500,000 a year in machinery, tools, material, plant sites, through brief, want-ad-like announcements in its bulletin. Pennsylvania is one of the most recent to begin publishing such a list.

Safety promotion, through campaigns and contests, is general among the association. The program of the Associated Industries of Georgia is typical of the good ones.

The Illinois Manufacturers' Association, finding a course in cost control was highly popular, has organized a sort of subsidiary, the Illinois Manufacturers' Costs Association, which devotes itself to this subject alone.

Associated Industries of Nebraska has helped organize an industrial health clinic in Omaha. The Mississippi Manufacturers' Association conducts conferences on industrial training, methods-time-measurement, quality control, conservation of water supply, control of stream pollution, industrial relations. The Manufacturers' Association of Connecticut has had a course in machine shop proficiency. Tennessee Manufacturers' Association carries its program to members in numerous local meetings instead of infrequent state-wide ones.

In Iowa, the Manufacturers' Association is conducting a study of state taxes. Most other associations publish periodical tax bulletins, tax calendars, and similar aids.

**Public Information.** Especially in states with large agricultural populations or comparatively small or new industrial development, the associations devote much attention to general public relations on behalf of industry. Associated Industries of Vermont and the Utah Manufacturers' Association promote products made in their states; Associated Industries of Alabama has had a highly successful "Alabama Industries Day," promoting locally-made products; in Maine and Mississippi there are efforts to attract new in-

dustry. Under guidance of Robert Ewens, executive vice-president, the Wisconsin Manufacturers' Association annually tells its story and shows its members' products to thousands in a permanent state fair show, "Wisconsin at Work."

Another program, partly motivated by social responsibility partly by good public relations sense, has been a spreading effort to enlist financial aid for private colleges.

The Indiana Manufacturers' Association was one of the first in this field. How the Wisconsin Manufacturers' Association conducts such a program was told in DR&MI, May 1955.

The associations vary in membership from about 200 to over 9,600—New Jersey's total. Despite the high membership, they share one difficulty with unions—frequent failure of members to participate after they join. Services available for the asking are often not taken advantage of.

Says Indiana Manufacturers' Association Executive Vice-president A. C. Conde:

"After we get individual manufacturers to join for their own good, we have a devil of a time getting them to use the help we have assembled. Therefore, our field men never give up on a manufacturer—they sign him up as a member to-day and to-morrow they drop in to tell him how to use that membership effectively. Next time around, they stop in to call to his attention the fact that he is not using many services he should. "It is a never-ending job, but it is the American way."

Otto Christenson, executive vice-president of Minnesota's lively Employers' Association, explains the strength of the state organizations this way: With membership limited (in almost every case) to manufacturing industries, they have a unanimity of interest and viewpoint that is lacking in many business groups. With hundreds or thousands of members, they can push, at a low cost per member, the issues that in bulk mean big savings to employers but which even a large company often could not afford to carry on its shoulders, alone. Big or small, members can win a big return on dues investment, if they make use of what the associations offer.



### *Industrial Clinics are New Jersey Feature*

Many state manufacturers' associations provide group life insurance or even major medical cost insurance for members' key employees, and some underwrite fire and casualty risks as well. Safety programs and counsel on workmen's compensation are a common activity, too. But the New Jersey Manufacturers' Association is unique in its sponsorship of the New Jersey Manufacturers' Association Hospitals, Inc., which maintains industrial clinics in five of the state's manufacturing centers. Entrance to one is seen at left. Clinics are staffed by specialists in treatment and rehabilitation of employees injured in the line of work.

# HOW TO EXPORT LIKE AN EXPERT



DROTTERGATAN PLAZA IN STOCKHOLM, WHERE AN OUTDOOR MARKET AND A MODERN OFFICE BUILDING MEET—SAUNDERS PHOTOGRAPH FROM CUSHING.

*Out of his many years experience as both an importer and exporter, Mr. Bagger, of Djursholm, Sweden, maps out a detailed program for producing profits for American exporters. Look for the checklist on page 120.*

## H. BAGGER

**Y**OU ARE manufacturing, let's say, electric coffee percolators. A couple of years ago you started to export part of your production. Are you satisfied with the results? They haven't reached the level you expected? And still you *had* counted on the lower purchasing power of foreign markets.

Perhaps your competitors are getting ahead of you. That's impossible, you say. Your percolators have been for many years the best in the field. Your prices compare favorably with your competitors. And you are the leading manufacturer in this country, outselling all others from coast to coast. Finally, there is no production of electric coffee percolators worth mentioning outside the United States.

You ought to take a look at your competitors, all the same. Who are they, in the first place? Other percolator manufacturers, of course. But don't tell me you have overlooked the fact that in going overseas with your goods, you have acquired an entirely new set of competitors. And these may manufacture vacuum cleaners, cutlery, or garden furniture. They may turn out merchandise as different from your own as men's underwear, canned salmon, or automobile accessories.

Let's take a look at your export organization.

You are selling through general agents, one in each country. And they sell your percolators to hardware stores and similar outlets, in some cases through regional distributors. In most countries electric percolators still are a novelty, and it has been impossible to measure the market potential with any degree of accuracy. You have therefore not been able to get your general agents to bind themselves to any fixed quantities above a very moderate minimum.

Take your general agent in Portugal, Senhor Afonso Ferreira Melo in Lisbon. What does he handle beside your percolators? Bourbon whiskey from a Kentucky distillery, a German typewriter, and carpenter's tools from Sweden.

The distillers in Kentucky, the German typewriter manufacturer, and the Swedish factory turning out the tools are *your competitors on the Portuguese market*.

And not only that. They compete with you "in the locker-room." If you are beaten there you won't even reach the baseline, where your percolators should meet and fight competition from other percolator brands. They won't even get a fair chance to prove their superiority to the Portuguese retailers, much less to the consumers.

In this locker-room competition you don't fight for dollars. You fight for the working

hours of Sr. Ferreira Melo, his salesmen, and his office staff. His enterprise is a small one. He may even have fewer employees than he has agencies. He can't organize any "Percolator Dept." with people whose only concern is to sell your product. He and his employees have to make a perpetual choice and decide which of the articles they shall work for at any one time. And they can't divide their interest evenly between the various articles they handle. The most attractive one will get the lion's share of working hours, and the others will linger in half-neglect.

You may call that bad organization and poor self-discipline. It probably is. Even if the company is small and their agencies numerous, an intelligent division of efforts would be likely to pay off in better over-all results. But if you look closely at any number of importing agencies you will find that the majority of them favor one of their articles at the expense of the others.

What, then, makes an article attractive to an importer? It may be factors which you can influence only to a very limited extent, or not at all. Import or currency restrictions may, for instance, handicap you or some of your competitors. Sr. Ferreira Melo's estimate of sales and profit potentials are further important factors.

*Continued on page 118*



# CULTURAL PURSUITS AND THE BUSINESS MAN

A panel discussion by

FRANCIS NEILSON • FRED OLSEN • D. B. STEINMAN

Occasionally DUN'S REVIEW AND MODERN INDUSTRY departs from established patterns of editorial activity to examine a topic of interest to the business man in his hours of leisure. We present here the ideas, experience, and suggestions of three men of unusual achievements. The opinions expressed go far beyond the realm of the literary hobby or the diversion of dabbling in art.

Francis Neilson, a versatile writer and a man of tremendous creative activity, examines the historic scene with a critical appraisal of the art and literature of the past. Fred Olsen, a vice-president and research specialist of Olin-Mathieson Chemical Corporation, stays within the radius of his own century to consider trends of art, and their com-

pensations to the appreciative and critical talents of the onlooker. David B. Steinman, consulting engineer and distinguished bridge builder, finds the Euclidean symbol of beauty in the rhythms of the steel arch. In his vocational approach he sees in the bridge the maximum achievement of beauty and utility, and offers the evidence of his own concepts in which steel is thread in the hands of the weaver.

In essence, Francis Neilson suggests that we obtain esthetic pleasure from what we know, Fred Olsen from what we see, David B. Steinman from what we do. No matter where or how a business man finds artistic pleasure in the world around him, the important decision is that he try using all the sensory gifts at his command.

## THE NEED FOR A CULTURAL AVOCATION

FRANCIS NEILSON

Mr. Neilson, a political economist with a colorful and valuable background as a writer, former Member of Parliament, and Shakespearean scholar, is equally at home in economics, art, or stagecraft. Besides many books, plays, and authoritative writings in history and the arts, he is a contributor to "The American Journal of Economics and Sociology." Born in England, he came to the United States for a long visit before the turn of the century, later returning to become a citizen.



IT MAY SEEM absurd to remind people of this day of the old saying, "Times are changed and we are changed in them." For they are made conscious, day by day, of the changes of the times and those which affect their lives. Yet it should be borne in mind that Cicero and Seneca were as deeply concerned about the changes of Roman life as were Socrates and Zeno of those in Athens. To mark the flow of

the tides of change in custom, habit, and ideas would be a fruitless labor if only a mere chart were made of the findings.

Statistical diagrams have their place and use in commerce, finance, and the sciences, but no recordings have yet been made of the strange vagaries of men endowed with reason, which turn them from the riches of a cultural past to seek a nebulous satisfaction in material gain.

Live, in the sense of thriving for himself, man must. This is the law of his being which can never change. He may lighten the labor of fending, but in principle he will remain a land animal and must produce food, fuel, clothing, and shelter for the needs of his physical well being.

There are, however, pursuits which raise him to the height of being lord of the fowl and the brute. No change can affect the latter. They remain the same to-day, and will to-morrow, as they were when Ptolemy collected his library at Alexandria, and Alcuin supplied the schools of Charlemagne with books from Yorkminster.

Perhaps a man who is nearing the end of his ninth decade may be permitted to cull from his own experience instances of pleasure given to friends who have wished to know what they would see when they were planning a visit to Europe for the first time. Many have enjoyed the itineraries sketched out for them, but before sailing day it was necessary for them to know a little about the places they would visit and the history of what they would see. For this purpose a Baedeker was of great use as a primer,

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# CREATIVE OBJECTIVITY FOR THE BUSINESS MAN

FRED OLSON

Dr. Olsen, vice-president and director of Olin-Mathieson Chemical Corporation, was in charge of research for one of its component companies in 1929. He has specialized in the fields of explosives, cellulose, and cellophane. His extracurricular interests center on studies of the nature of creativity and methods of stimulating it. He has also studied the relation of modern painting and sculpture to art of the very early cultures. His exhibits of contemporary and Coptic art are currently on a two-year tour of various colleges.



IN ANY CONSIDERATION of the bases of our American cultural heritage, we turn instinctively to the declarations of the Founding Fathers, and rightly so, because it was their efforts which crystallized our political ideas, and gave us the doctrines of freedom and personal significance which so clearly characterize our culture.

Perhaps we may go back to nearly a hundred years before the deliberations of 1776, to the philosophy of John Locke, which sprang out of the turmoil of the overthrow of the "Divine Right of Kings." The invitation of a foreign prince to accept the throne of England seemed convincing enough to all who were willing to think about the matter that the authority of the king stemmed from no source higher than the people who had invited him. Government of the people was to be by the people themselves.

Fundamental to our heritage therefore is the validity of the decision-making power of the individual, and of that group to whom the individuals have delegated the authority to govern.

It is hardly necessary to suggest that this recognition of the right of the elected group to make decisions binding on the electorate is at the very core of our democracy. Man does not easily relinquish his most prized possession. Our Anglo-Saxon ancestors and our more immediate American ancestry have valued freedom second to no other value. Many cultural interests and aspirations must therefore relate to our insistence upon personal freedom, our maintenance of a grasping hold upon each element of freedom, and our building protecting walls to prevent its escape and to deny encroachments upon it.

However, within the framework of this fierce cult of freedom has come the intellectual recognition that our neighbor too is equally entitled to his freedom, and it followed as a logical neces-

sity that these separate pursuits of freedom would inevitably and frequently lead to areas of conflicting interests.

To avoid a state of continuous warfare in these regions of dispute, man has invented compromises, rules of conduct, moral standards and laws which, with magnificent self-delusion, he has believed were to control the "other" fellow, even if they did annoyingly impose restrictions on himself. And what a mighty body of rules he has fashioned for curbing his neighbor!

In no area of American activity has this mass of regulatory material grown to larger proportion than in modern Business. I am referring to Business with a capital B because in recent generations American Business has been the area of major activity for our initiative.

Now Business may be regarded as merely a means by which a man may earn a paycheck that will allow him to feed his family and have a little left over for what he designates as cultural pursuits.

This I think is much too narrow a role for Business. In the United States, certainly, Business is a definite building block in the structure of our culture.

Even in our own space of life, many of us have seen Business gain in prestige far above the earlier concept of "trading." Business is no longer just selling goods to a perhaps not too willing customer; it is equally concerned with the production of goods, and indeed, equally too with the scientific research that creates new products for man's benefit.

Business is perhaps one of the major aspects of American culture. And so complex has American Business become that it is quite possible for a man to achieve a highly rewarding mode of living within its framework. Nevertheless, in this realm of Business man has had to hedge

himself around with so many restrictions (to curb the "other" fellow) that he has subjected himself to a quite major infringement of his personal liberties. Even when as an executive he helps to formulate the major policies of his company, he agrees to set times for his coming and going; he phones his wife at the last minute that because of a continuing conference at the office, he cannot come home in time for his daughter's birthday party; he perpetually subordinates self-interest to corporate interest. He has voluntarily relinquished a major part of the freedom which is the cornerstone of our democracy.

Business has thus become a fundamental and in many cases a dominating factor in our current American culture. It is against such a broad concept of the cultural aspects of modern Business that I turn to the topic of "The Value of Cultural Pursuits to the Business Man."

Here "Cultural Pursuits" can probably be considered as active interest in some intellectual or esthetic operation. I say "active" interest because it has always seemed to me to be much less rewarding to indulge in vicarious living, such as the watching of baseball or of TV programs of entertainment, rather than to be an actual participant.

Among "intellectual pursuits" I would include any form of study where, by mental operations, we seek to acquire a better understanding of any subject, whether it be philosophy, or Elizabethan poetry, or Maya glyphs.

By "esthetic pursuits" I would mean any non-capricious participation in any of the arts developed around our sensory percepts. Obviously such fields as painting, sculpture, or music would be included. One of the most satisfying human experiences is the conscious consummation of any creative act. Actually this holds over the entire gamut from physiological to psychological to esthetic.

## The Enjoyment of Creativity

Referring only to the area of esthetics it is perhaps fortunate that creativity can be enjoyed in a multitude of stages from the quite trivial to the profound. I am using "profound" in the sense of "deeply moving," such as must have been experienced by Van Gogh in his violent paintings at Arles. Or as Dante experienced in his cosmic encompassment in the *Divine Comedy*. Or as Bach must have encountered during the brilliant complexities of his fugal inventions, or as any group of Satchmos or Leadbellys felt in a good jam session. Or in the case of Brancusi,

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# BEAUTY AND ITS VOCATIONAL SYMBOLS

D. B. STEINMAN

Mr. Steinman, bridge builder of international renown, taught civil engineering after receiving a Ph.D. from Columbia. Since 1920 he has devoted his energies to building bridges on five continents and is currently at work on the largest bridge in the world across the Straits of Messina. Notable among the hundreds of bridges where he has left his mark are the Triborough and Henry Hudson Bridges as well as the Brooklyn Bridge he helped renovate to meet modern traffic needs.



cisco, blessed with a natural setting of beauty, unveils its Golden Gate Bridge almost daily from the fog that rolls in from the sea. Manhattan combines architectural grandeur and splendor with its spiked horizons and river rhythms of skyscrapers and bridges.

Occasionally, an esthetic-minded public can change official decisions. In the design of the George Washington Bridge, the strong esthetic appeal is due largely to the natural grace and simplicity of the suspension type—expressed by two high and sturdy towers and the natural parabolic arcs of the great cables from which the slender floor system is suspended. The striking beauty of the steel towers was not planned. They were designed merely as load-carrying skeletons to be subsequently encased in concrete and masonry. The authorities gladly yielded to the public when it demanded that no false facing be added.

The late Arnold W. Brunner, architect and city planner, expressed a deep feeling when he said: "There is something about a great bridge which better unites the work of God and man than any other structure." A 16th Century bridge designer, Palladio, recorded a standard for future ages when he declared that bridges should be "convenient, beautiful, and durable." Every bridge should be designed with the guiding and impelling thought to achieve beauty. To build their famous aqueducts, the ancient Romans used thousands of tons of masonry in massive piers and arches to carry a small conduit for water supply. To-day, graceful, airy spans of steel carry thousands of tons of useful load. Ponderous proportions are no longer the visual expression of power.

## Beauty of Design

The primary essentials for making a structure of esthetic appeal are honesty and simplicity, plus elementary beauty of line, form, and proportion. In the words of Fra Filippo Lippi, "If you get simple beauty and naught else, you get about the best thing God invents." There are different conceptions of what constitutes beauty in bridges and, correspondingly, there are different methods of attaining it. Some of the conceptions are characteristic of the country of origin. Each method is a valid contribution, and all need to be considered by the designer.

The "17-Arch Bridge" at the Summer Palace of the former Dowager Empress near Peiping is an artistic gem. The tapering series of arches in this structure delight the eye from every angle.

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**W**HETHER "Beauty is in the eye of the beholder" or is a tangible and dimensional object is a problem in definitions. The natural world offers mankind a variety of things of beauty, but it offers no greater reward than the beauty man creates out of the resources or materials of nature, whether they be a statue, a building, or a bridge. In my own life, the bridge with its curves, arcs, and angles, as it fights gravity and clings to the sky, is the living symbol of man's struggle for growth, for conquest, for expression.

Each man takes a symbol out of his experience or makes his own concept of an ideal out of his daily task. The excavator sees a symbol of power and poetry in the snort of a bulldozer or the grinding teeth of a clam-shell bucket. The architect of a skyscraper has the same poetic glow of dedication to grandeur and splendor as the designer of a cathedral, and to both it can be spiritual and esthetic triumph.

I am a bridge builder and I am primarily concerned here with vocational esthetics as a device or agent of cultural rewards. I can admire the achievement of Roebling in the old Brooklyn Bridge, and the sense of adventure in his mind when he looked across the tidal sweep of the East River and visualized the web of steel that would support a path for commerce between Manhattan and Brooklyn. I speak with feeling here because it was my task in 1948 to help reconstruct the bridge to meet the demands of modern automotive commerce. Here was the first bridge to dare the drag of gravity using steel cables to carry the weight of the span and its traffic. This was a victory for the poetic mind in action.

Vocational esthetics can be applied to ship-building, from the wind-driven clipper ships of Donald McKay to the screw-driven transat-

lantic liners of William Francis Gibbs. Man, imitative and curious, has found esthetic excitement in his conquest of the air from the first paper design of Leonardo da Vinci to reality of flight by the Wright brothers at Kitty Hawk.

Cultural enjoyment is always a mental exercise in which the mind finds its pleasure, even its fear, in symbols. The whole world mourned the sinking of the Andrea Doria, but none more than the sailor who beheld it as a masterpiece of ship designing, as pleasurable to the eye in motion as it was useful to its passengers seeking a means of transport over water. The loss is an art tragedy, of far greater significance than the money loss of an investment in a carrier of passengers and mails.

A beautiful building is a pleasurable experience for the eye, not alone in the success of its lines, or the materials used, but often in its variety of scenic moods against the dawn, the sunset, the moonlight, or even the snow squall. Buildings, boats, and bridges take on personalities, and even suggest individual temperaments. There was even talk of the demon-possessed bridge that crossed the Tacoma Narrows and, mysterious warnings, whipped itself to destruction on November 7, 1940. Actually, it was an evil wind whose force and fickleness were underestimated that set up the violent contortions of the steel span in a dance of death. The whims of nature have to be considered in an esthetic approach to the combined utility and beauty of a bridge, boat, or building.

Cities have personalities that conjure up esthetic and cultural excitement but, when you analyze the sources of their individuality, these are often easily identified sources of the pleasure that is evoked. Any mental picture of London immediately brings up the Thames with its bridges and bustling river traffic. San Fran-





WHETHER IT'S BOSTON . . . OR PHILADELPHIA . . . OR DETROIT . . . OR SAN FRANCISCO

## ... MIDDLE BUSINESS HAS MAJOR PROBLEMS IN SALES PLANNING AND DISTRIBUTION

*The over-all management problems of "Middle Business" were discussed in the July issue by Richard Sanzo. Now he narrows his sights on sales strategy with special attention to the distributive problems in the long-neglected area recognized as "Middle Business." His observations and recommendations on planning, field tactics, and sales policies are based on first-hand knowledge. While applicable in principle to any company regardless of size, they are discussed essentially in terms of the middle-sized categories in industry and distribution. The problem he poses is common to many business men and the approaches he describes are important for all executives.*

# A MAJOR PROBLEM OF MIDDLE BUSINESS

RICHARD SANZO

Staff Analyst, Dun & Bradstreet, Inc.

**A** LITTLE OVER two years ago, two friends of mine went out to shop for new cars. The automobile market in the Spring of 1954 was very much more in the doldrums than it is to-day. Dealers were complaining about cars piling up, prices were slipping, and customers were not as abundant as they are even in to-day's period of moderately declining sales. Under the circumstances, my friends reasoned that, what with high discounts and trade-ins, seductive advertising, and heavy inventories, 1954 would be a good year to buy a new car.

The stories of their experiences in car shopping were surprisingly similar. It was difficult to obtain the attention of salesmen in the showrooms. In several places, the salesmen seemed lackadaisical about demonstrating the models on the road. Some salesmen failed to ask the name of the prospect. Trade-ins were quoted "by the book," regardless of condition of the trade-in. After the prospects left the showrooms, little or no effort was made to follow up their visits with phone calls.

As one rather astonished prospect pointed out, "It was almost as though they were daring me to buy!"

Car buyers will testify that there has been considerable change in the attitude of automobile salesmen since 1954. What brings the incident to mind is the fact that this was the time when not only auto dealers, but business executives generally, were propounding with recurring frequency the question, "What can we do to increase our sales in such a competitive market?"

Looking back, we can agree that business men have probably been asking this question since the earliest days of commerce. They are asking it to-day. To them, it may be an old problem, but it wears a lifted face.

The sales problem in to-day's boom period is, of course, somewhat different than it was in the business adjustment period of 1954—but the problem is probably just as acute. Sales expansion is a critical goal. It represents more than the instinctive aspiration of management for new fields to conquer.

The business man recognizes that the mere act of "maintaining" sales isn't good enough, particularly for the middle and small sized concern. A company which is content to "level off" for any prolonged period had better order a burial plot, for it is headed for a slow death.

The reasons are clear. Record year-to-year expenditures for new plants and equipment have resulted in the highest output of goods by industry in history. Industrial research is constantly developing new products or fresh uses for old products. Engineering talent is designing even more efficient productive equipment. Retailers are building new stores as never before to catch the full tide of swollen personal incomes, shifting and increasing populations, and changing consumer tastes and modes of living. All these factors are of themselves a challenge to marketing.

Meanwhile, wage and material costs have been in a spiral. The customer must be wooed; and resistance is strong. There is a limit as to how much of these rising business costs can be

passed along, particularly when the consumer has so many choices as to when and how he will spend his dollar. The dilemma of gigantic production on the one hand, and rising costs-of-doing-business on the other, has been met in the main, and particularly by middle and small businesses, by cost absorption, which means shaded profit margins. The counter to cost absorption is increased inventory and capital turnovers; it follows that increases in the volume of sales are a virtual necessity.

In this squeeze, the big business has the advantage of organization, including a battery of trained cost, production, and marketing specialists plus capital to expend in research and promotion. The really small business man can offset his costs by providing his own labor and working longer hours. The middle business executive must look for fresh approaches.

There are two such approaches, the one tactical, the other strategic. The tactical approach has to do with such factors as pricing, arrangement of selling terms, direct contact by the salesman. The strategic approach has to do with the marshalling of the talents of management. This suggests a comparison between a business campaign and the fighting of a war. Indeed, there are remarkable similarities. In the last war, we had to be strong behind the lines before we would be strong at the front. Only when we had the organization were we able to convert supplies, equipment, and trained manpower into an effective mission.

Some middle businesses yield to the temptation of using the tactical approach exclusively. Their answer is similar to the one which we received from the distaff member of our household. In a fanciful moment, we asked facetiously if she had any recommendation to make for a business seeking to increase its sales. We got the answer we deserved. "Easy," she shot back. "Let them cut prices."

Price cutting in itself is easy to do, and it can be fatal. Cutting margins without compensatory reductions in costs is a fast way to go broke. Similarly, an argument can be made for liberalizing selling terms but the dangers are great. As for the intensified sales contact, it is a weapon, but much depends on the force with which it is delivered.

Attempting to establish how much of a sale is exclusively the result of a salesman's effort is like trying to establish how much of a war is won by the soldier. Obviously, the salesman does the selling just as the soldier does the fighting, but each is directly dependent upon effective organization, supplies, and strategic planning behind the front.

Some time ago, a group of companies which

had celebrated their first 100 years were asked to state what they considered to be the underlying factors behind their longevity. The answers varied, but these factors were common to each reply: Adaptability to new products and new methods; research toward better and dissimilar products; mass production and/or mass distribution at a low profit; sound labor policy; a sense of civic responsibility.

These replies bear only indirectly on the problem of increasing sales in a competitive market, but they point the way to four strategic manage-

They are like members of a baseball team who are more concerned with batting averages than scoring runs.

At times, unnecessary conflicts between department heads occur. The sales manager is at swords points with the credit man, or clashes with the factory about deliveries, or with the comptroller about the advertising budget.

Such conflicts do not help in a competitive market. Progressive managements, perhaps out of sheer weariness in reconciling viewpoints, have worked out a new approach. It's simply

this—get the department heads together and have them confer frequently with top management. Then define the over-all management objective and the problems involved. Make these objectives and problems a common responsibility. Finally, let the individual departments, with their varying responsibilities and experience, suggest solutions.

Sometimes department heads catch the spirit of major management objectives without the benefit of formal procedures. Some years ago, for instance, a credit manager came to the conviction that his job carried a two-fold purpose. One purpose was the protection of that portion of his employer's capital which was invested in accounts receivable. The second purpose, it seemed to him, involved making the credit department a supplementary sales tool.

He did this in two ways. One was by offering counsel on financial problems to customers, then cementing their friendships. The second was making known to the sales department that he was ready to work with them before, rather than after, border-line accounts reached a point of critical decision. In such instances, his slogan was "Let's put on our hats and go out to talk to the account together."

The three-way liaison between customer, salesman, and credit man often paved the way for suggestions which enabled a shaky customer account to mend finances. Not only was customer loyalty insured, but the sales department was convinced that the credit department could be a valuable ally in the fundamental objective of placing sound business on the books.

Many medium-sized businesses are handicapped by their inability to afford the services of full-time perimeter specialists, particularly in the sphere of marketing, personnel, policies, personnel relations, and financing. Yet they may have within or close to their internal organizations hidden talents on which they could rely.

Credit men, for example, frequently have sound marketing information at their grasp, for they know the territories, follow the accounts, and understand fundamental economic situa-

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#### MIDDLE BUSINESS

- An area of our productive enterprises which includes from 100,000 to 125,000 companies that are neither large nor small in a statistical sense

#### ITS PROBLEM

- The growing battle for customers amid rising costs
- Strong price resistance with retreating profit margins
- A need for reinforcements in the form of higher sales
- The development of strong, strategic generalship before the tactical deployment of salesmen

#### THE SOLUTION

- A lining up and positioning of the management team
- Pursuing the possibilities for product improvement and adaptation and for promotion
- A readiness to adapt to changes in marketing and distribution methods
- A careful selection and training of salesmen

ment approaches which seem particularly appropriate to the conduct of middle business. They are:

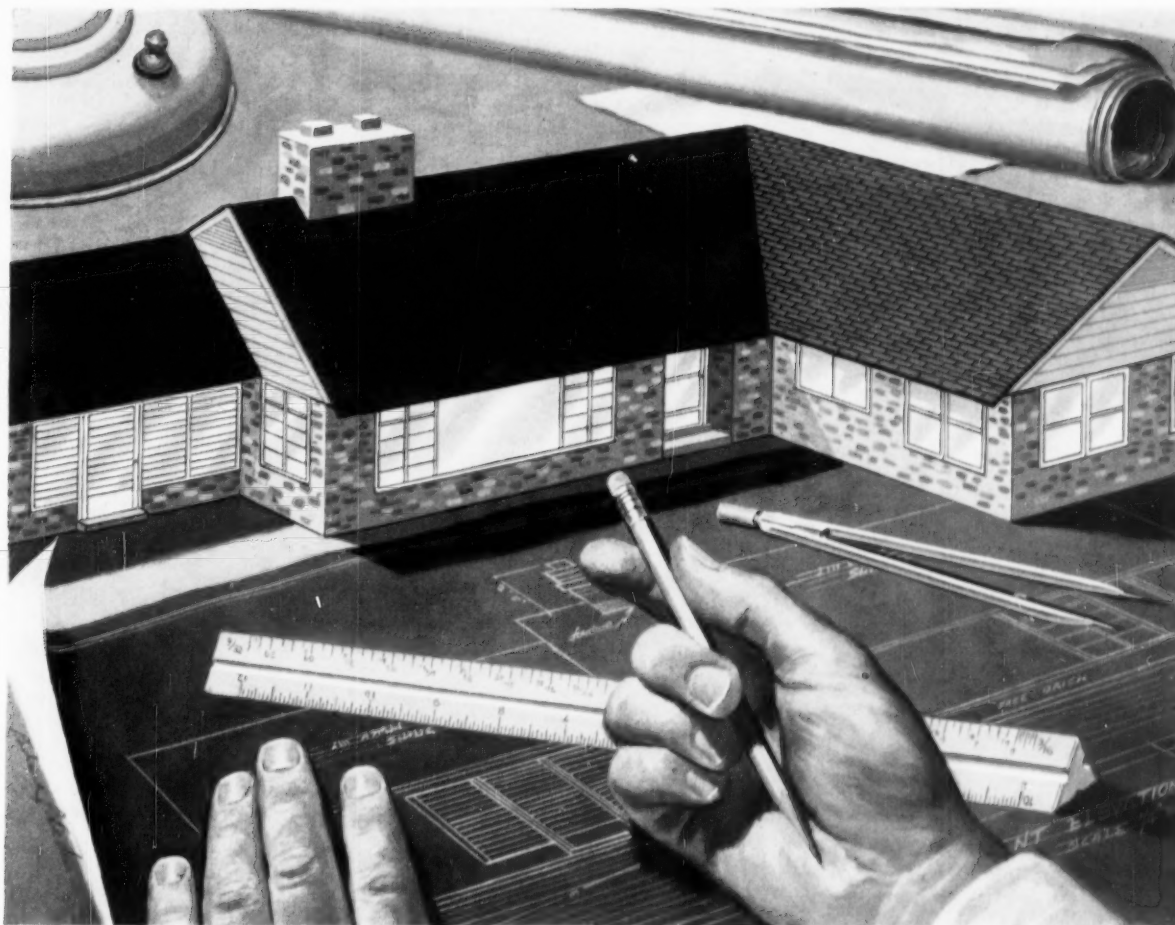
1. Line up the management team—then put it into position.
2. Be alert for possibilities of product improvement, adaptation, and promotion.
3. Be ready to adapt or readapt to changes in marketing and distribution methods.
4. Then select carefully and train the salesman.

##### *1. Lining Up the Management Team*

In middle business the tendency has been to isolate management and departmental functions. When there is a sales problem, only the sales manager or star salesman is consulted. If there is a question of expense, the treasurer is called in. Credit losses—see the credit man. Production costs—check with the factory.

A business, to be successful, must work toward an objective. For many middle concerns, knowledge of the objective is confined to the top levels—for example, the president and one or two other officers. Many department heads, functioning without knowledge as to company plans or policies, then tend to confine their contribution to their individual or departmental records.

# Big as all outdoors



■ No matter what the size of the house, modern home builders have given it new dimensions. They have opened up the living areas to embrace the outdoors, to create a new feeling of space and light.

Such sweeping design changes have not been without major heating and cooling problems in all climates. The solution is basic—modern homes of open design can be fully enjoyed only with storm enclosures that are equally modern. And these enclosures must match the ever-rising standards of the home-building industry in

year-round comfort, convenience, durability and economy.

Eagle-Picher's two complete lines of aluminum storm and screen enclosures surpass the most exacting specifications. Both the "Eagle" and the "Orange" brand offer permanent convenience, strength without bulk, beauty that accents good architecture. And above all, Eagle-Picher integrity is built into every window, door, porch enclosure and jalousie. We welcome inquiries on these products. Drop us a line.

**Divisions and principal products . . .** CHEMICAL DIVISION—lead and zinc pigments and oxides, sulphuric acid • FABRICON PRODUCTS DIVISION—automotive products, plastics, waxed paper and cellophane food wrappers • INSULATION DIVISION—aluminum combination storm enclosures, mineral wool insulations, diatomaceous earth products • MINING & SMELTING DIVISION—zinc, lead, germanium, cadmium • OHIO RUBBER COMPANY DIVISION—molded and extruded rubber products.



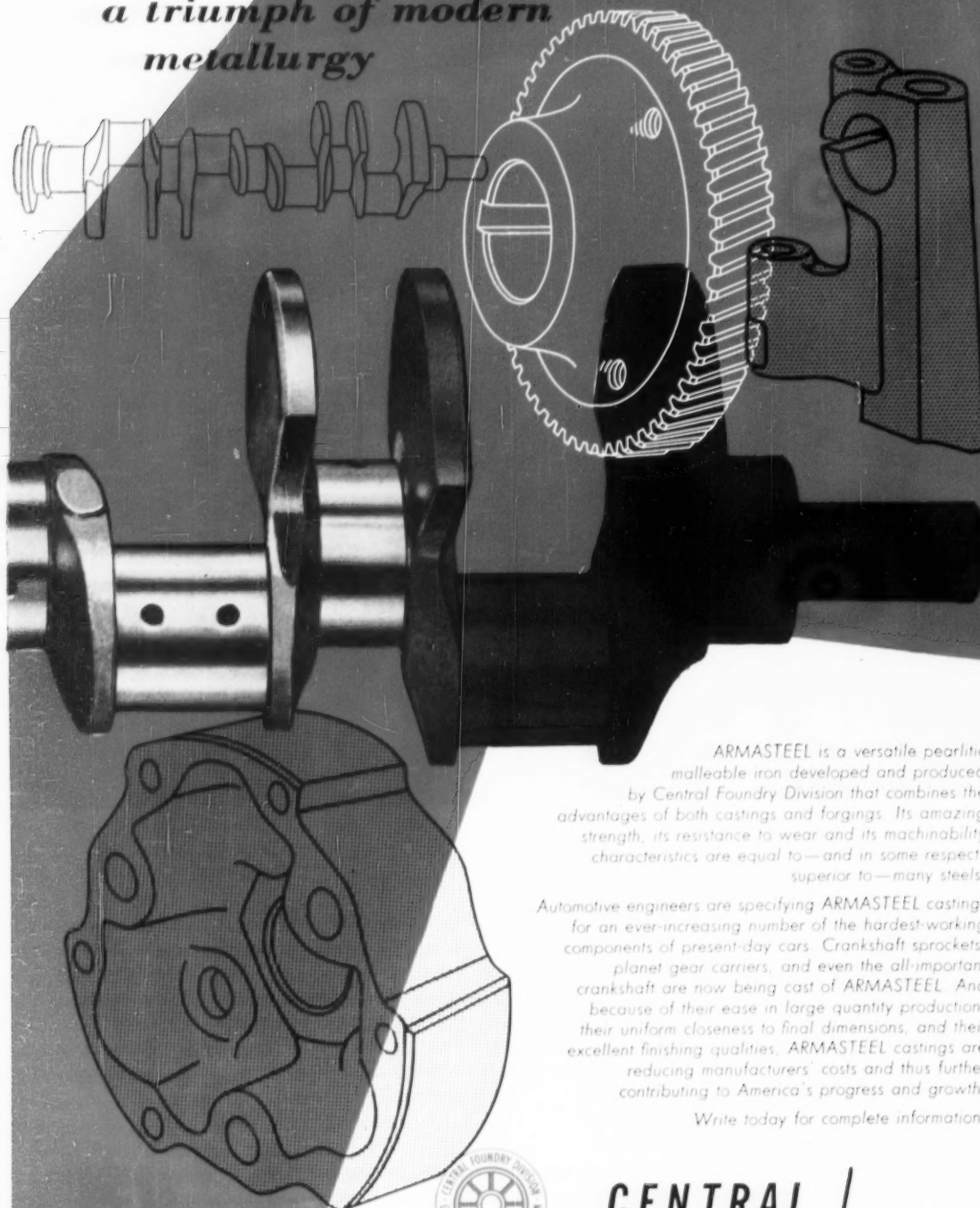
The Eagle-Picher Company, General Offices: Cincinnati 1, Ohio

Since 1843

## EAGLE-PICHER



**ARMASTEEL.**  
*a triumph of modern  
 metallurgy*



ARMASTEEL is a versatile pearlitic malleable iron developed and produced by Central Foundry Division that combines the advantages of both castings and forgings. Its amazing strength, its resistance to wear and its machinability characteristics are equal to—and in some respects superior to—many steels.

Automotive engineers are specifying ARMASTEEL castings for an ever-increasing number of the hardest-working components of present-day cars. Crankshaft sprockets, planet gear carriers, and even the all-important crankshaft are now being cast of ARMASTEEL. And because of their ease in large quantity production, their uniform closeness to final dimensions, and their excellent finishing qualities, ARMASTEEL castings are reducing manufacturers' costs and thus further contributing to America's progress and growth.

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 FOUNDRY  
 DIVISION**

GENERAL MOTORS  
 CORPORATION  
 SAGINAW, MICHIGAN  
 DEPT. 22



# MATERIALS: TIME FOR A CHANGE?

ANNESTA R. GARDNER

Industrial Editor

**R**EMEMBER WHEN a manufacturer could spend a generation turning out just one product with the same group of materials and showing a profit year after year? That wasn't long ago. Now, the company which sticks to the same product—much less the same materials—even for a decade seems like the exception to the rule.

A DUN'S REVIEW AND MODERN INDUSTRY survey, just completed, shows that 38 per cent of the companies in seven major industrial categories have added new basic materials or dropped old ones in the past five years, and 59 per cent expect to do so in the next five years. These figures refer to high-tonnage, critical structural materials. When it comes to minor or small-quantity materials, for parts like gears, fasteners, buttons, and bushings, change is almost universal.

Sheet metal fabricators are learning to work with plastics and fiber products; ceramic processors are teaming up with powder metallurgists; and companies that specialized in plastics are putting in metalworking presses and woodwork-

*New materials, appearing with breathtaking speed . . . new fabrication methods . . . prices on a roller coaster . . . shortages and surpluses . . . These are only a few of the problems that face management to-day in manufacture of products ranging from textiles to tentpins; and they add up to a need for reexamination of every material from the standpoint of purchasing, production, and performance. Here, in text, charts, and pictures are points to guide that reexamination, plus an executive checklist (page 76) and a report on what other companies are doing and plan to do (page 66) in the years ahead.*

ing machines to meet new customer demands.

But the smart management doesn't change materials just for the sake of change, or because the company down the road is doing so. As the survey shows, most companies are looking for specified advantages in price, availability, properties, and production methods.

They are trying to reduce fabrication costs and to minimize their dependence on materials

which have been unstable in supply and price in recent years. For instance, more than half the users of steel and copper are hungrily eyeing possible substitutes—notably aluminum and plastics. Users of natural fibers are turning to synthetics and natural-synthetic blends. The charts on page 61 point up this trend, so clearly indicated in the survey replies.

This does not mean that the older materials

## SURVEY HIGHLIGHTS

DR&MI asked fabricators of metals, textiles, plastics, wood, and paper products to list their most important materials to-day, and to indicate changes made in the past five years and expected in the five years ahead. They were also asked how materials and services offered by suppliers could be improved, and about their experiences with some of the newer materials. Here are highlights of their replies. Detailed information will be found on the following pages.

- *Industry wants new and better materials—and is willing to pay for them.*

Since 1950, nearly 4 out of 10 have made changes in their major materials.

By 1961, 6 out of 10 expect to make changes in their major materials.

They are looking for better materials, turning to higher alloys, improved fibers; seeking greater corrosion resistance, greater strength, easier handling.

- *While the trends in materials used do follow the expected pattern, the shifts are by no means all in one direction.*

Quite a few manufacturers are turning from plastics to steel and from synthetic to natural fibers as the older materials are improved and made competitive with the new.

- *More technical information is needed by the manufacturer.*

More than half of those who replied entered a special plea for more and better technical information and service. This emphasis on technical needs is noteworthy in view of the fact that it was so obviously a concern of top management. (More than two-thirds of those who signed their replies were company presidents and vice-presidents.)

- *There is much more resistance to unstable prices than to high prices as such.*

Users are willing to pay a premium for better

materials and for the price stability that will enable them to establish firm costs in advance. Unstable prices, though, are driving them away from several basic materials.

- *Broken delivery promises, rather than shortages, are a major complaint.*

While fewer than one in ten complained either of high prices or shortages, many complained of late deliveries and of broken promises. And this was just as true in the textile industry, where supply has frequently exceeded demand in recent years, as in the metals industries which have suffered from recurrent shortages.

- *Many materials users are still unaware of the special qualities of even the best-known industrial materials.*

Some also condemn certain materials for failings which have long since been corrected. Both are by-passing opportunities to improve their products and reduce fabrication costs.



## Furniture's on the move... with TUFFLEX

—on the move from retailer's floors to customers' homes, that is! This unique cellulose cushioning—TUFFLEX®—is helping to speed furniture sales and build retailer's profits.

And why not? In dinette chairs—in upholstered furniture of all kinds—Tufflex makes possible a better-looking product with a quality "feel." Everyday Tufflex is padding and cushioning more backs, seats, decks, loose cushions, arms, and trim strips. Tufflex doesn't bunch, doesn't sag, cuts cleanly with firm, true edges, stays in place, is uniform in texture.

You can get Tufflex and the new Tufflex non-woven fabrics in a wide variety of types and thicknesses with widely varying characteristics. Tufflex products can be cut to intricate patterns...can be laminated with various backings.

Tufflex products are solving many a knotty problem for industries today. Perhaps Tufflex can help YOU—complete information and samples are yours for the asking. Wood Conversion Company, Dept. 239-96, First National Bank Building, St. Paul 1, Minnesota.



### ...and for handbags, luggage

—as well as other padded products, Tufflex non-woven Fabrics help create a smooth, luxury look that appeals strongly to customers. These easy-to-handle non-woven fabrics, used under plastic or other coverings, make possible the trim, tailored lines that spell quality. Tufflex Fabrics also make excellent fillers and pads for use in the manufacture of garments.



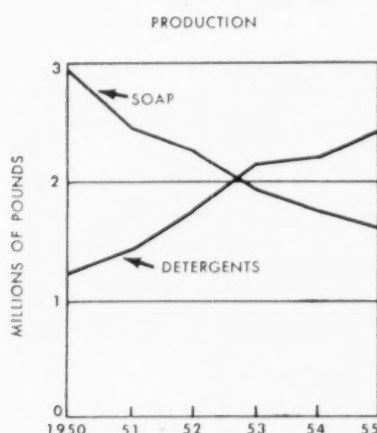
FOR CUSHIONING...PROTECTIVE PADDING...

THERMAL INSULATION...SOUND ABSORPTION AND DEADENING...MOISTURE ABSORBENCY OR REPELLENCY

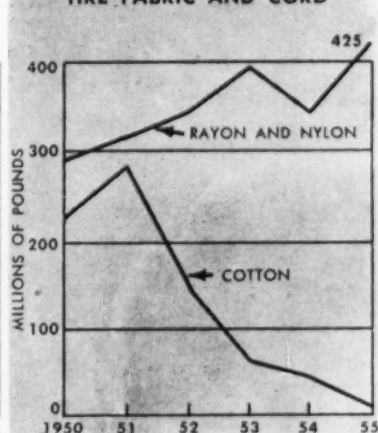


# MATERIALS . . . *How they have changed*

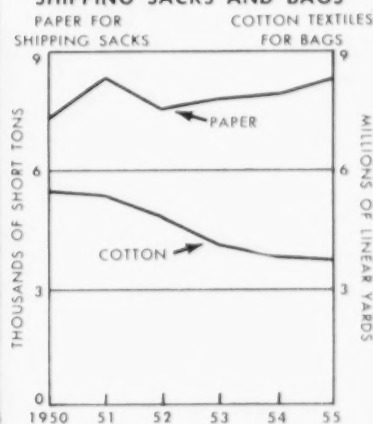
SOAP AND DETERGENTS



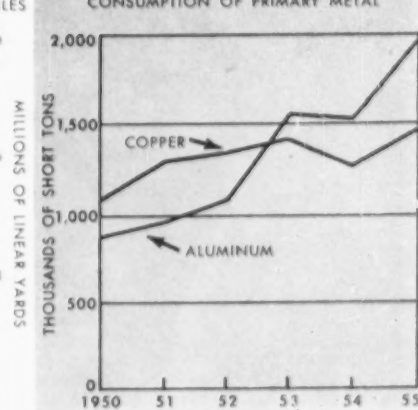
TIRE FABRIC AND CORD



PAPER AND TEXTILES FOR SHIPPING SACKS AND BAGS



ALUMINUM AND COPPER CONSUMPTION OF PRIMARY METAL



face early extinction or even major declines.

Cotton may be losing out in bags and disappearing from tires. But total cotton consumption is still over nine million bales (four billion pounds) a year.

Steel has its troubles. But productive capacity is at an all-time high. Aluminum and plastics can't begin to match it. Total production of these two materials is barely four million tons—not a great deal when compared to the present productive capacity of nearly 130 million tons for steel.

Furthermore, producers of the older materials, now well aware that key markets are threatened,

are taking steps—particularly on the technical level—to reverse the trend.

Cotton processors are developing new treatments to make cotton fabrics more durable and easier to care for.

Steelmakers are putting in new production lines to provide better-quality tinned and galvanized metal, and developing new alloys that offer higher strength and greater corrosion resistance.

Copper producers are providing new shapes and sizes to meet the demands of modern design and automatic processing.

To the user, this competition between old and

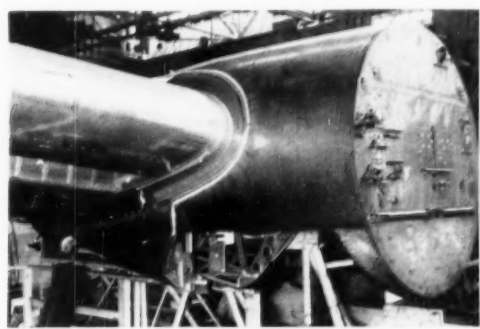
new is good news. It means that he can shop around among materials to find those which can best help him meet the demands of technological progress and offer his customers new and improved products. There is little doubt that this is what he wants to do. Particularly noteworthy in the survey replies is the number of companies anxious to boost product quality, seeking better materials, almost regardless of price. They want these materials, not just for special products like jet engines, but for standard items ranging from blouses to bulldozers.

For example a producer of power tools says he could and would pay more for a metal which

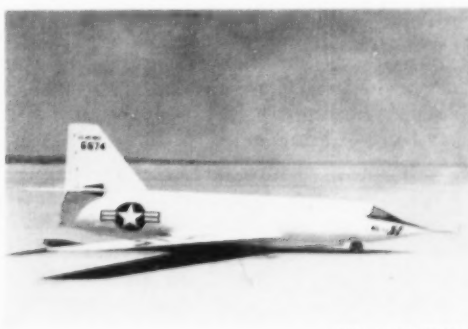
## Triple play in transportation

Materials come and go as new designs call for higher speeds, lighter weight, and greater resistance to heat, corrosion, vibration, and impact. For example, aluminum had a corner on the aircraft market almost all to itself. Then came new models, calling for air-frame and skin materials with higher strength and greater heat resistance.

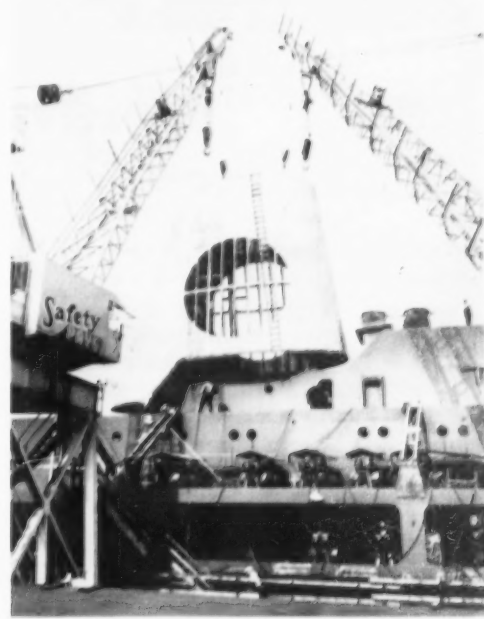
Titanium seemed like a good bet. But, even before it has reached widespread use, planes are being planned that will move even faster, generating even more heat, and designers are looking around again. Aluminum and titanium manufacturers won't be caught napping, though. They are already exploring other markets.



DOUGLAS AIRCRAFT COMPANY



BELL AIRCRAFT CORP.

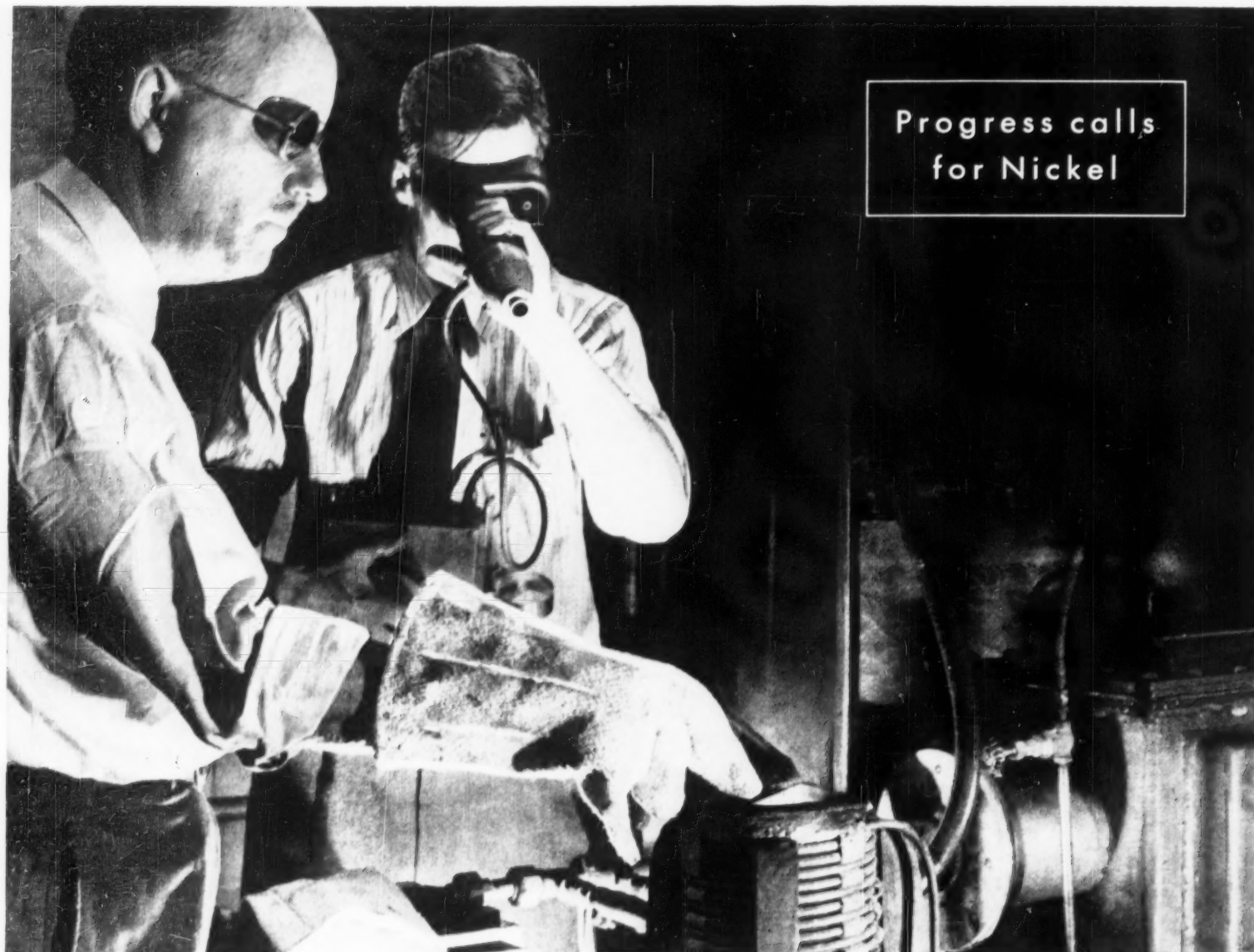


MATSON LINES

Titanium's big chance came when heat generated by high-speed planes threatened to exceed operating limits of aluminum alloys; weight-strength requirements were moving upward, too.

Stainless steel now comes to the fore as military craft like this experimental rocket-powered plane are designed for still higher speeds and temperatures. This one hit 1900 miles per hour.

Aluminum, meanwhile, is finding new fields to conquer. Development of corrosion-resistant finishes opens up marine applications as in this superstructure for new Matson passenger liner.



Progress calls  
for Nickel

## When you need an answer ...look to Inco research for help

**When you have** a metal problem that does not seem to have an answer...

It is a good time to think of International Nickel Company metallurgists. They are constantly developing new nickel alloys, and improving and modifying existing ones to meet new requirements.

### Big family of Nickel Alloys

In the last fifty years and more, Inco research has developed more than fifty Inco Nickel Alloys. Each with special characteristics. Further, Inco research has helped industry develop many of the 3000 other alloys containing Nickel that are so important in this "Age of Alloys."

Often, there is a very good chance that one of these alloys offers exactly the combination of properties you are looking for.

You can benefit from the knowledge of processing and using alloys accumulated by Inco's team of metal specialists.

But new problems are always arising that require new answers and The International Nickel Company keeps its research laboratories continually busy in adding to this fund of knowledge.

### Primary goal of Inco Technical Service

When nobody knows the answer, Inco metallurgists keep going until they have

investigated all possible metals and alloys that might do the job. The men in Inco's Development and Research Division have one primary goal: to help you determine whether a nickel alloy or some other metal will serve your purpose best.

For prompt technical help whenever you need information about metals, get in touch with: "Development and Research Division." The International Nickel Company, Inc., Dept. 254e, New York 5, New York.

©1959, T. I. N. Co., Inc.



## International Nickel

*Producers of Inco Nickel, Nickel Alloys, Copper, Cobalt, Iron Ore, Tellurium, Selenium and Platinum, Palladium and Other Precious Metals*

# MATERIALS

offers a higher strength per pound; and, for hacksaw blades, he'd like a better steel, "regardless of price."

This manufacturer, and others like him, are not lacking in price-consciousness. But they recognize that raw materials cost is far less important in the long run than fabrication and handling costs and the quality of the finished product.

## What Users Want

It is recognition of this fact that is leading many manufacturers to place "ease of fabrication" high on their list of desired qualities. As one metal products manufacturer puts it, "We determine the desirability of a material on the basis of over-all cost of manufacture, not on material price alone."

Indeed, there are those who believe that what industry needs is not so much new materials as increased knowledge of how to work with those already available. It is certainly true that, with several of the newer materials, production ability has outstripped application knowledge with the result that raw materials pile up while shortages develop in semifinished and finished forms (see page 79).

This situation can set a trap for the unwary. There is a real danger that too fast and too radical a change will be made; and that costly backtracking will be necessary later on.

Many companies find that much can be gained by changing the form in which a material is used, adopting new fabrication methods, and applying new finishes, without shifting to entirely new materials. Before substituting plastics for sheet metal, for instance, a manufacturer would do well to investigate new, high-speed stamping methods, and the vastly improved tin-coated, aluminum-coated, and galvanized materials coming from the newest automatic processing lines.

There are fashions in industrial materials just as there are in clothing. At one point, "everybody" was using plastics; at another point, "the" material may be titanium. The danger in this sort of thing is two-fold:

First, that a material will be tried and rejected before it is really ready for use, and then eliminated from consideration later on at a time when it might really prove a valuable addition. Magnesium (see page 76) is a case in point. Powdered metals provide another example.

Several survey respondents stamp powdered iron "tried and rejected" on the grounds of "lack of strength" and "poor corrosion resistance."

Those criticisms might have been justified ten years ago. But powdered iron parts can now be produced with a tensile strength of 60,000 pounds or more, as sintered, and this can be raised to

nearly 90,000 p.s.i. by heat-treatment and age-hardening. Adding small amounts of nickel will raise this figure still further—to well over 100,000 p.s.i.

As to corrosion resistance, there are new stainless steel powders, developed over the past few years, and a good many other special alloys as well.

Synthetic fibers have suffered from the same sort of prejudice. Early difficulties in dyeing, sewing, and cleaning made many a manufacturer turn back to the older fibers which, despite their faults, were easier for him to handle and better known to his customers. Now, new dyes and dyeing methods and new fiber blends are overcoming the early problems, and the synthetics have so many positive advantages they can't be ignored. But there is little doubt that their shiny future got a bit tarnished in the process.

As one survey respondent put it: "It's the points of breakdown and failure that determine the limitations of the product. The material suppliers could improve their services a lot by doing more research on properties and methods of fabrication before announcing new materials."

The second danger in playing "follow-the-leader" in adopting materials fads and fashions is that good, practical, serviceable materials like carbon steel, vulcanized fiber, and hard rubber (see December 1955, page 74; and August, page 48) will be neglected or discarded as being "old fashioned."

## Don't Change Too Fast

There are, then, good reasons for delaying changes as well as for encouraging them.

Those who have made no major changes in their basic materials in the past five years and expect none in the near future are not necessarily head-in-the-sand ostriches, destined for early demise. In the "no change" group, there are undoubtedly companies which should be looking around for new materials and new ways to improve old ones. But there are also some who already use almost every basic material in such large quantities that new materials can not help but be "minor" additions. Too, there are companies which regularly reexamine the materials they use but have not, so far, found new ones that are superior to the old.

Still, there is no doubt that this group is in the minority, and shrinking fast, and the company which thinks it belongs here would do well to check and re-check to make sure the materials parade is not passing him by. The section starting on page 66 and the questionnaire on page 78 can serve as a guide for that reexamination and a guide for product improvement.

By the same token, the supplier who depends on "established" or committed markets these days is leaning on a twig. Aluminum had the aircraft market sewed up—until jet plane speeds got so fast the heat of friction threatened to exceed its limit. Then designers turned to titanium. Now, stainless steel, too, is coming into the picture. Says General David Baker of the

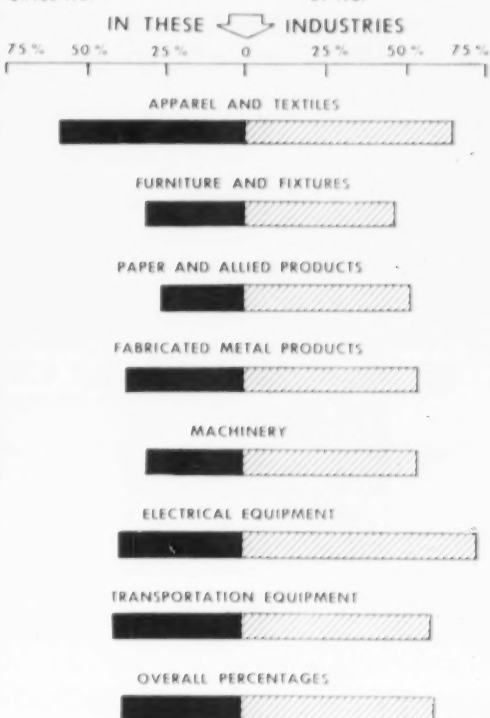
## The changing pattern of use

Who has changed materials? Who, is planning to change? Close to 400 companies, big and small, were asked: Which are your most important materials today (from the viewpoint of quantity or critical nature); which were most important five years ago; and what do you expect your major materials to be five years from now? The charts below indicate the percentage in each industry classification, and in three size groupings, who, by their replies to these questions, indicated major shifts in materials usage between 1950 and the present date; and those who plan basic changes in the next five years.

### THIS PERCENT OF COMPANIES . . .

HAVE CHANGED THEIR BASIC MATERIALS USE PATTERN SINCE 1951

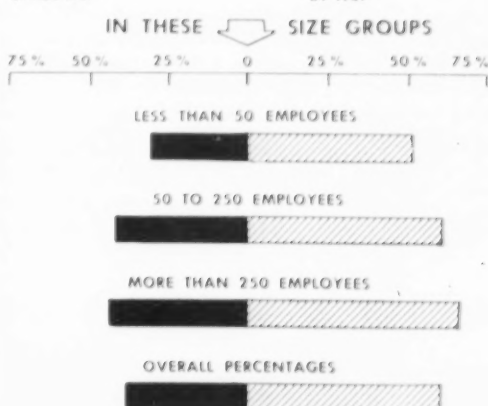
EXPECT MAJOR SHIFTS IN BASIC MATERIALS BY 1961



### THIS PERCENT OF COMPANIES . . .

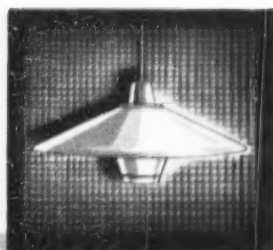
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EXPECT MAJOR SHIFTS IN BASIC MATERIALS BY 1961

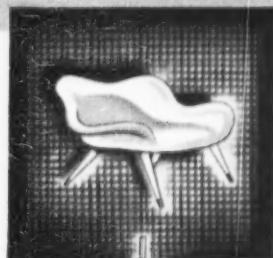
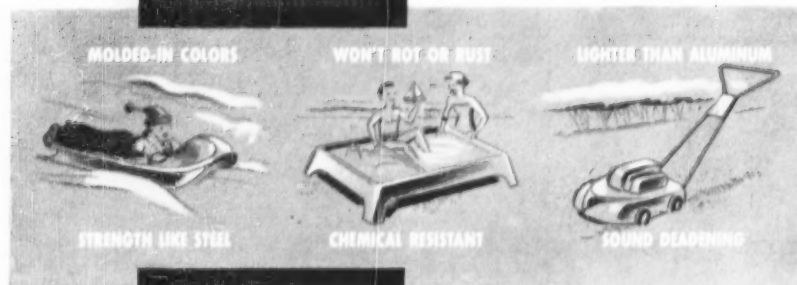




custom  
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Your product, in whole or in part, may be ideally suited for adaption to an incredibly strong, amazingly light weight, beautifully textured Lewis one piece molding.

"Look ahead" executives are enthusiastic about the many product improvements and design possibilities with Lewis moldings. Let our experienced plastic engineering staff study your product, whether it be in existence, or still in blue-print form.

Fiber Glass reinforced plastics stimulate fresh, modern style appeal... and are exciting new sales potentials to a wide variety of consumer and industrial products. And no wonder, for the outstanding physical characteristics of this basic new material, plus its many profitable production advantages, create great interest and impact everywhere. Powerful dimensional stability... chemical resistance... tolerance to temperature extremes... chip-proof, rust-proof, rot-proof, corrosion-proof... and a limitless variety of lasting colors molded-in for life... all these benefits, and many more, are to be found with Lewis reinforced polyester moldings.

More and more leading manufacturers are depending on Lewis for quality reinforced plastic moldings. Our trained engineers are ready to assist you in converting your product to this new material.

**G. B. LEWIS COMPANY**

209 Montgomery St., Watertown, Wisconsin



Air Materiel Command: Present-day fighter planes are 15 to 20 per cent stainless steel. Our new ones will be 70 to 75 per cent.

In this case, no tears need be shed for aluminum. Its suppliers, alert to just such a possibility, are investigating new, more heat-resistant alloys and sintered parts for jet engine use; and they have roads paved to new outlets in ships (page 59), automobiles (page 84), electrical equipment (page 75), and many other fields. Titanium, too, is out for new markets.

#### Future Problems

But stainless can't just sit back and rake in the chips either. While it is gaining in the aircraft industry, it may lose out on other fronts.

Right now, stainless steel is the preferred material of construction for nuclear reactors. Its strength, resistance to heat and corrosion, and relatively low neutron absorption makes it a natural choice. But stainless and uranium form a low-melting alloy (eutectic) at about 1350° Fahrenheit, and reactor operating temperatures are now getting close to that point. When they reach it,

reactor designers may have to turn to uranium-nickel or uranium-chromium alloys or ceramic-type materials. Stainless steel will continue to have many applications in atomic energy production, but one potentially-important market may disappear.

Rayon, too, had best look to its laurels before it congratulates itself on capturing the automobile tire cord market. As the chart on page 59 shows, the conversion from cotton to rayon was accomplished in a remarkably short space of time. But, there are those who believe this rayon consumption has just about reached its peak. Nylon is moving in and may well corner half the market in the next five years.

The fact is that rapid technological advances, combined with a shifting price and supply picture, make change about the only thing that is certain. The materials user who is not prepared to try new materials and the supplier who is not beating the bushes for new markets are likely to find themselves at the far end of the table when the profit pie is sliced.

*Tips to Suppliers, page 66*



WHY NOTHING  
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PAINTS

Subox paints save money now... and through the years to come.

They are the only paints in America made with chemically-active suboxide of lead—one of the most effective anti-corrosive agents known. It is a heavy colloidal pigment that spreads smoothly, evenly, thoroughly; adheres closely and endures for many years.

Subox\* and Subalox\* paints are economical to apply, and are so enduring that they greatly reduce future maintenance costs. They largely eliminate the need for scraping and repriming each time repainting is required.

Many of America's foremost industries rely on Subox paints. If you require corrosion protection in your business, write for the brochure, "Subox Paints."

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\*Trade Mark

20 Fairmount Plant, Hackensack, N. J.

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See Catalogues in Sweet's  
Industrial and Engineering Files





#### Representative Morganite Products

Steam engine piston rings  
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 Glass molds  
 Glass cradle blocks  
 Glass lip turners  
 Glass foot forming pads  
 Oxygen seals  
 Thrust bearings  
 Gasoline valves  
 Contacts  
 Brush holders  
 Cores for metal castings  
 Chemical bearings  
 Gas meter valves  
 Air compressor vanes  
 Water turbine seals  
 High temperature bearings  
 Kiln car wheel spacers  
 Supercharger bearings  
 End plates  
 Crane current collectors  
 Commutator brushes  
 Slip ring brushes  
 Carbon disc voltage regulators  
 Refractory ware:  
 Crucibles  
 Insulators  
 Pyrometer tubes  
 Furnace tubes

Carbon may be your solution IF —

- a) contamination is an undesirable factor, as in textile and food machinery
- b) corrosion is to be avoided
- c) temperatures are too high for conventional lubricants and metals

Of course, the greatest and best known advantages of carbon are that it needs no lubrication and that it does not seize on to metals.

Other properties provide additional advantages for particular applications. It has a wide range of resistance to chemical attack . . . is not wetted by molten metal or slag . . . retains high mechanical strength at high temperatures . . . has low thermal expansion . . . and has good electrical conductivity.

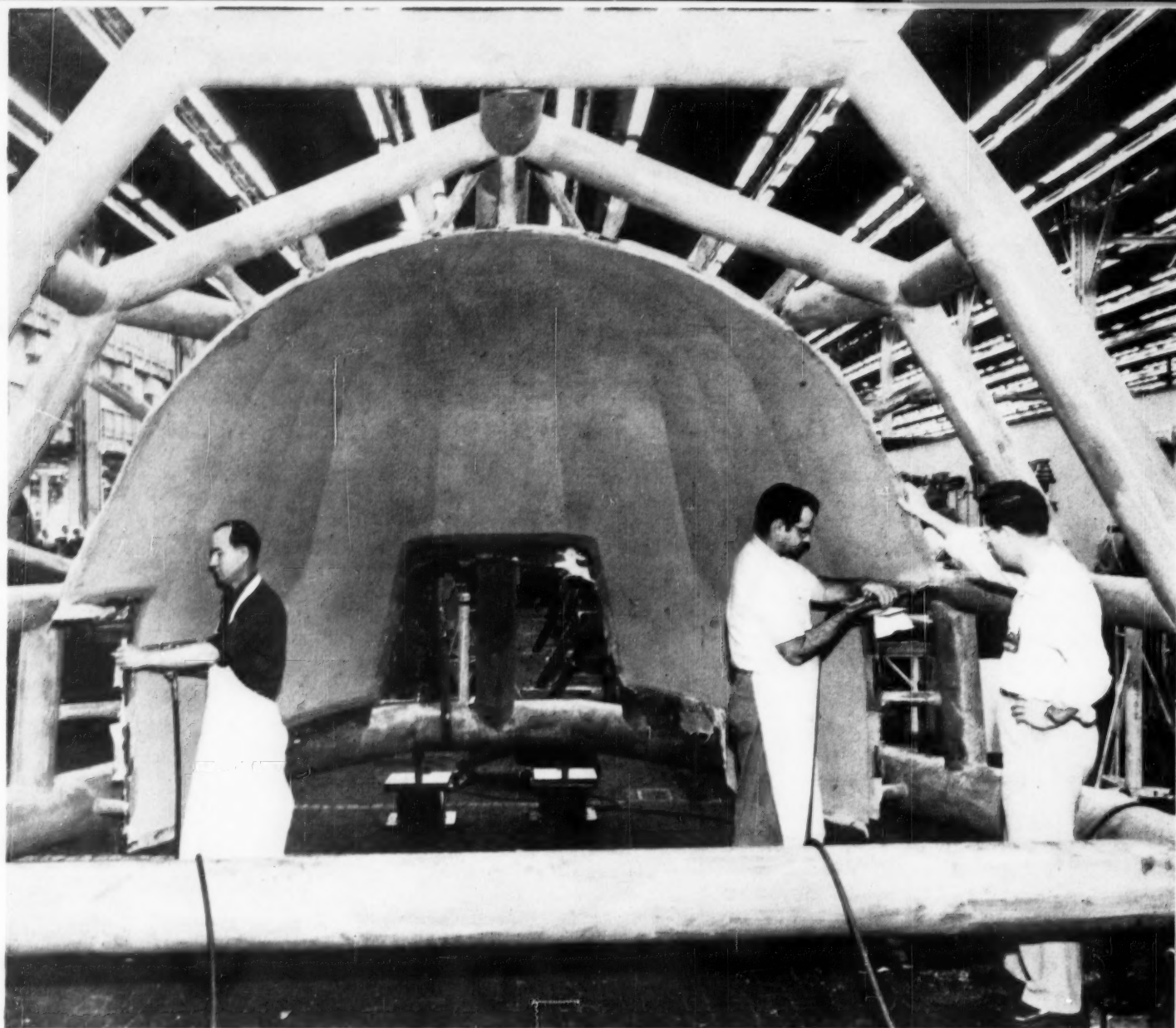
Why not send us the details of your design problem. Our Engineering Staff will be glad to give you the benefit of its long experience in developing carbon formulas for special applications.



**Morganite**  
INCORPORATED

Manufacturers of fine carbon-graphite products for fifty years.  
3320 48th Avenue, Long Island City 1, New York

Airplane tool made with epoxy resins is probably the largest plastic tool ever made. It's a master gauge to check alignment of parts on the Lockheed Hercules C-130 "prop-jet" plane. Pressurized fuselage demands a tight, accurate fit between sections. Gauge shell is laminated of glass cloth and epoxy resin, providing excellent precision for a tool this size.



## Up-dating your present product?

## Planning a new one?



**Coil embedded in epoxy resin** gets protection from impact, moisture, aging. Resin also has high dielectric strength. Embedment is accomplished by pouring liquid resin and catalyst into place. It penetrates every crevice, then hardens into a strong, dimensionally stable mass.

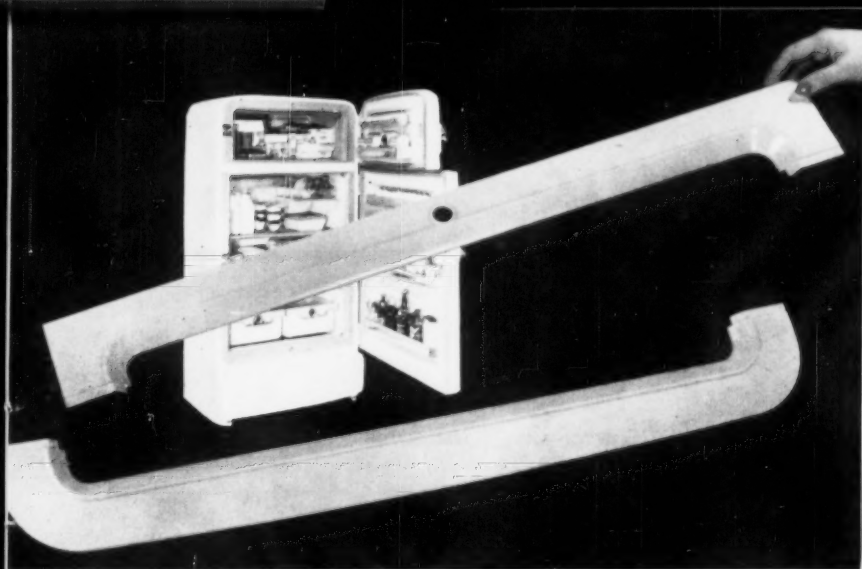
Take a look at just a few of the things BAKELITE Brand Plastics are doing. It's only a small sample of how sales-minded and efficiency-minded manufacturers are using the powerful, unique, and virtually unlimited combination of useful properties that belong to plastics. Not only are they effective materials in themselves, but they help other materials to reach new heights of usefulness.

New plastics, new combinations and formulations are constantly being developed. They make new products possible. To others they give a new lift in

performance, sales, or utility. They're willing and able workers for you.

And, with forty-six years in plastics, you have a powerful, unique and unsurpassed fund of plastics knowledge at Bakelite Company... plus the greatest variety of plastics and resins available through one convenient source. Why not put this resource of men, materials and methods to work for your present and future products? For more ideas of what BAKELITE Brand Plastics are doing, and can do, write Dept. TO-42 for the "Condensed Reference File."





Refrigerator breaker strips made of impact styrene frame the entrances to food and freezer compartments, forming a snug fit when the doors close. They are tough enough to withstand slamming at freezer temperatures. They also can be produced in color, and their glossy finish will resist household cleaning solutions.



Typewriter keys of C-11, a special BAKELITE plastic, feature precision molding. First the grey buttons were molded hollow, with openings for the letter. Then the white insert was molded in from the bottom. C-11 is highly resistant to staining by inks, oils and food chemicals.



Squeeze bottle of polyethylene features new "hollow action" for dispensing graphite. Polyethylene plastic has inherent flexibility and a wide range of color. Its chemical resistance is superior. Polyethylene weighs less than any commercial plastic, a factor in reducing shipping costs.



Furniture drawers of phenolic plastic are molded in one piece, and in several stock sizes for furniture and built-in storage units. They don't warp, have no seams, and are easily cleaned. Their fine finish enhances cabinet woods.



Wire and cable coverings rely on polyethylene and vinyl plastics. Polyethylene has excellent moisture resistance and dielectric properties, and is used as both insulation and jacketing. Vinyl provides superior toughness and resistance to abrasion and the elements, making it ideal for jacketing. Both materials are extruded onto the cable.

## First in the world of plastics



Cushioned by vinyl resin coating, shelves for kitchen cabinets are made of metal coated with plastisol—a thick, resilient material. Plastisols can either be used as coatings or molded into flexible three-dimensional products. They come in a variety of colors.



PHENOLICS • STYRENES  
IMPACT STYRENES • POLYETHYLENES  
VINYL • POLYESTERS • EPOXIES

### BAKELITE COMPANY,

A Division of Union Carbide and Carbon Corporation UCC 30 East 42nd Street, New York 17, N. Y.

In Canada: Bakelite Company, Division of Union Carbide Canada Limited, Belleville, Ontario

The term BAKELITE and the Trefoil Symbol are registered trade-marks of UCC

# For safety at work or play

## ...use FLINTDEK\* Anti-slip Coating

Cure slippery areas of steel, concrete or other surfaces with FLINTDEK, easily applied by trowel, brush or spray. Use around factories, home, public areas. It's your finest protection against injuries and damages. Makes walking safer...even when wet.



**Safeguard stadium or grandstand** traffic in any weather. Flintdek makes handsome surfacing, too. Choose red, green, slate gray, yellow or cement color.

**Flintdek Anti-slip Coating** should be a *must* around swimming pools, diving platforms, shower rooms, docks and play decks . . . where footing is insecure.



**Be sure to use Flintdek on steel** catwalks, ladder stairs, gangways and around machinery on surfaces made dangerous by oil or water. Coating bonds perfectly and is not softened by grease.

**Steps...any steps are safer** when coated with Flintdek. It's resistant to water, oil, gasoline, alcohol and greases. Properly applied, it won't crack, chip or peel. Takes heavy wear.



**Flintdek is not a paint.** It is a heavy-bodied plastic with tough, mineral filler . . . classified as an anti-slip by *Underwriters' Laboratories*. An ideal trowel-on floor coating for protection against slipping.

\*Reg. U.S. Pat. Off.

Low-cost coverage—approximately 50 sq. ft. per gallon. Send for application data today.

## FLINTKOTE *Products for Industry*

THE FLINTKOTE COMPANY, INDUSTRIAL PRODUCTS DIVISION  
30 Rockefeller Plaza, New York 20, N. Y.

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In Toronto, Ontario: THE FLINTKOTE COMPANY OF CANADA, LTD.  
In London, England: Industrial Asphalts Company, Ltd.



## MATERIALS

### *Tips to suppliers*

**W**HAT'S wrong with today's materials, and with the services offered by materials-suppliers? How might both be improved? Users, as represented by respondents to DR&M's materials survey, have a lot to say on that score. Here is a sampling of their comments:

1. *How might the services offered by suppliers be improved?*

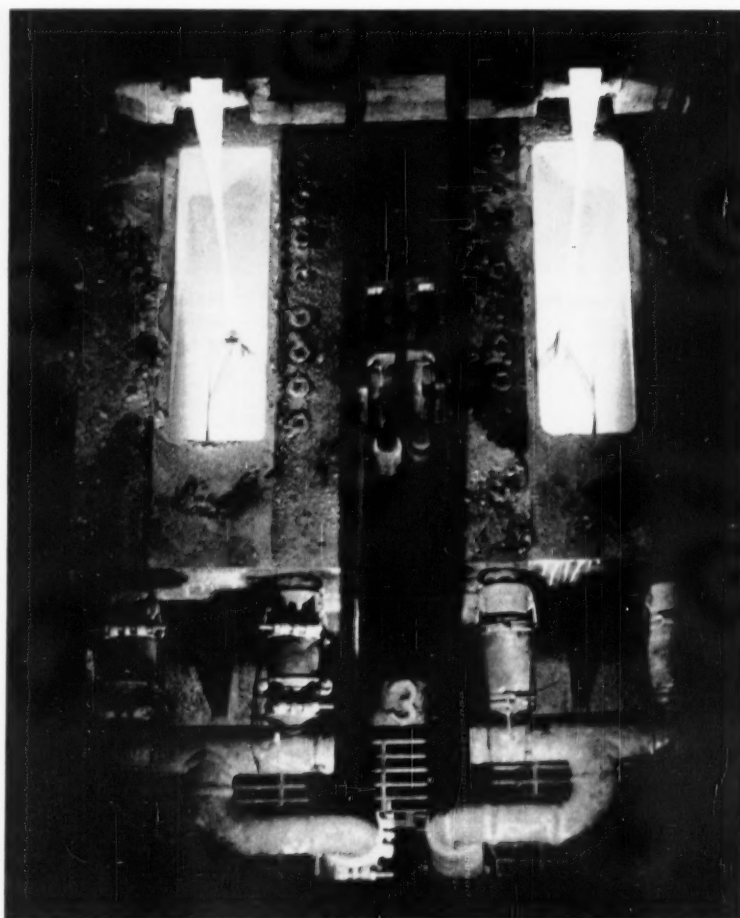
Of those who answered this question (about three-quarters did), far more complained about lack of technical data and engineering assistance than about prices, quality, or deliveries.

Fewer than one in ten mentioned prices, and less than 15 per cent mentioned deliveries. But, where

delivery problems are mentioned, the complaints are worth noting.

It is not so much the existence of shortages that annoys materials users. They can understand that. It is broken delivery promises—the failure to deliver materials at the time and in the way specified—that causes trouble. This failure is, apparently, just as common in the textile industry, where there are few shortages, as it is in the metal industries where shortages are the rule rather than the exception. Manufacturers of shirts, dresses, and fashion accessories complain just as bitterly about broken delivery promises as do makers of electrical and electronic equipment.

It is not only late delivery that



KENNECOTT COPPER CORPORATION

Automatic processing often calls for materials in new shapes and sizes—continuous coils rather than cut sheets, for instance. Suppliers can help meet this need, as one copper producer does here, with new billet shapes from which longer lengths of copper and copper alloy strip can be produced.

## How long do you expect to STAY in business?



### If you are planning for a long future, use **COPPER**

**Your tomorrows!** *They* decide which raw materials you should choose.

Considering that it takes years to establish a reputation, isn't it a mistake to overlook the use of copper or copper components in your product that can protect its good name?

For one big thing about this metal is that it endures. It serves for years, generations, centuries.

This characteristic of copper can help you to protect your Company's future. For your customers like to get their money's worth. And that includes long-term use. Endow your product *now* with copper's own long life!

Copper can look back on a history as old as man's . . . and forward to a future as promising. *Stay* in business with *copper*!



# COPPER & BRASS

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#### COPPER OR ITS ALLOYS PROVIDE THESE ADVANTAGES:

Best conductor of electricity commercially available



Does not rust .. high corrosion resistance



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Easy to machine, form, draw, stamp, polish, plate, etc.



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LOOK AT THESE

## PRODUCTION GAINS...

(Broaching vs. Milling)

CASE NO. 1  
**5 to 1 Faster**

CASE NO. 3  
**3 to 1 Faster**

CASE NO. 2  
**25 to 1 Faster**

CASE NO. 4  
**10 to 1 Faster**

"METHODS:

Time for  
a change?"

Are YOU Broaching?

**DETROIT BROACH  
& MACHINE COMPANY**

ROCHESTER, MICH.

DEPT. H-9

Offices in Principal Cities throughout the World

causes trouble. As the president of a metalworking company points out, early deliveries make inventories pile up and create storage and financial problems which can be almost as serious as the late deliveries which cause production slow-downs.

Complaints about lack of technical data were frequent and forceful. They came from companies of all sizes and in all categories. The magnitude of the problem is indicated by the high percentage of top management people who replied to this question. Of those who gave their names and titles, about 40 per cent were company presidents, and another 20 per cent were vice-presidents and general managers.

When a problem like this assumes major importance in the eyes of top management—even in large companies—it calls for prompt and positive action on two fronts: first, filling the need; and, second, telling customers and potential customers that the need is being filled. Both steps are important. If customers don't know about the technical assistance that is available, it's little help to either supplier or user.

### 2. How might materials themselves be improved?

Survey respondents have many suggestions in this area, both general and specific. They want higher-quality materials almost regardless

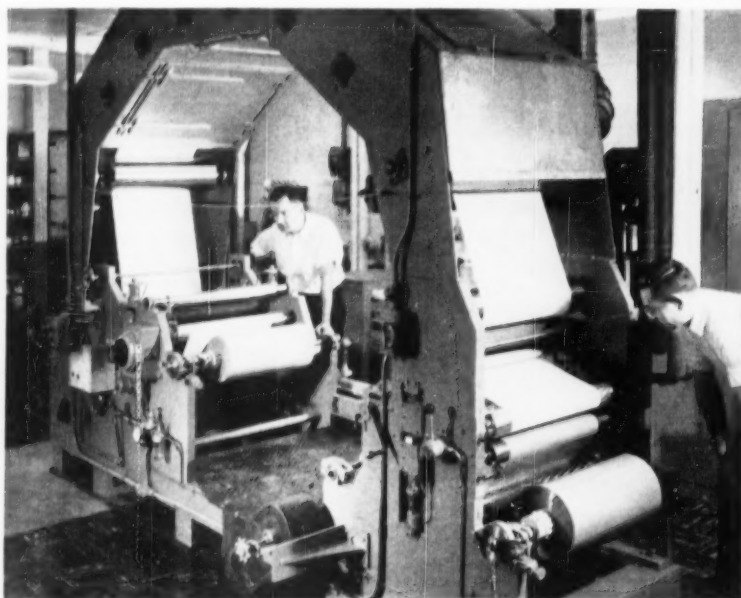
of cost, and for every kind of product. The uniformity of their demands for greater strength, heat resistance, wear resistance, and stability is remarkable. Below, for example, are five quotations from survey replies. They sound as if they all came from the same industry. But they do not.

One manufacturer asked for "lighter weight and better quality"; another for "lighter weight combined with wear resistance." A third put in his bid for "greater heat resistance." "Lightness and high heat resistance" were qualities requested by a fourth respondent; while a fifth asked for "lighter weight and wear resistance."

Far from making the same type of product, these manufacturers represent quite a range of items. The first three quotes are from clothing manufacturers who want lighter-weight, durable fabrics that are capable of being ironed. The fourth makes fasteners and is looking towards the demands of jet planes, nuclear reactors, and mobile power units. The fifth is a builder of elevator conveyors.

In their replies, materials users also noted many interesting special requirements:

Makers of gloves, infants' wear, and sport clothes would like plastic films and plastic-coated materials that are strong and light, yet are easy to sew and able to remain



Service laboratories are welcomed by materials-users who point out that practical application data are still needed, even for well-established materials. In this laboratory, equipped with standard production-line machines, a materials supplier studies performance of new plastic films under the varied laminating conditions that customers may encounter.

## THE MODERN WAY



**HANSEN** ONE HAND TACKERS THE STAPLERS  
IN PRODUCTION — assembly — tagging — labeling — maintenance (insulation, screens, etc.) — convention, plant and store displays — HANSEN leads the field as the "preferred" TACKER.

PRODUCTION (A few of 1001 Hansen Uses)

- PLASTIC DIAL PLATES ON RADIOS
- LOUDSPEAKER SILKS
- GASKETS TO REFRIGERATOR DOORS
- RUBBER DIES ON PRINTING ROLLS
- CELLOPHANE OR GLASSINE IN RADIOS

One-hand operation — light weight — ready portability — compactness — powerful driving action — Take-up Jaw for easy dismantling and assembly — are among the features that appeal to Hansen users.

### 36 MODELS—80 STAPLE SIZES

From a wide variety of models — for light, medium or heavy-duty service — and for driving staples of various lengths and widths — you can choose the model best suited to your needs. Staples available in tackpoints and chiselpoints, single or double-leg, and in required widths.

For BEST RESULTS use only genuine Hansen Staples in the BLUE BOX . . .



**A. L. HANSEN MFG. CO.** Request Booklet 1004F  
5034 RAVENSWOOD AVE., CHICAGO 40, ILL.

## REDUCE LOADING COSTS



## ACROSS THE BOARD!

It's amazing the amount of money that can be saved by using Magliner magnesium dock boards. 82% of America's 100 largest companies specify and use them regularly! Magliner dock boards cut down on loading time . . . get more out of power trucks and other loading equipment. They speed traffic and increase dock handling capacity! Made of magnesium for easy, one man handling, Magliners provide dependable, long-life service at low cost! Find out how little a Magliner will cost and how much it will save you! Write today for Bulletin DB-204.

**Magliner** MAGNESIUM **DOCK BOARDS**  
**MAGLINE INC.**  
1931 Mercer Street  
PINCONNING, MICH.

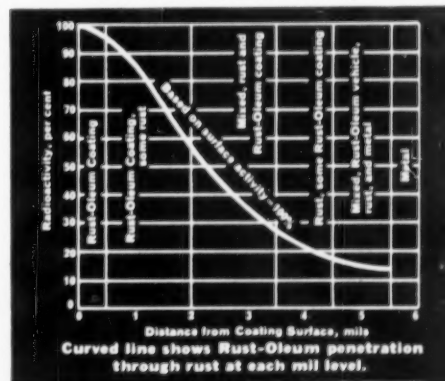
In Canada: Magline of Canada, Ltd., Renfrew Ont.

There is only one Rust-Oleum... it is as distinctive as your own fingerprint.

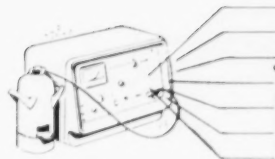
# RUST-OLEUM STOPS RUST!

**Penetration through rust to bare metal traced by Geiger Counter**—Utilizing a modern tool of science, Rust-Oleum's *specially-processed* fish oil vehicle was radioactivated and formulated into Rust-Oleum 769 Damp-Proof Red Primer—then applied to rusted test panels. Geiger Counters then traced Rust-Oleum's *specially-processed* fish oil vehicle through rust down to bare metal. Because of this penetration, you can apply Rust-Oleum directly over sound rusted surfaces—usually eliminating costly surface preparations. Write for your copy of the thirty-page report entitled, "The Development of a Method To Determine The Degree of Penetration of a Rust-Oleum Fish-Oil-Based Coating Into Rust On Steel Specimens," prepared by Battelle Memorial Institute technologists.

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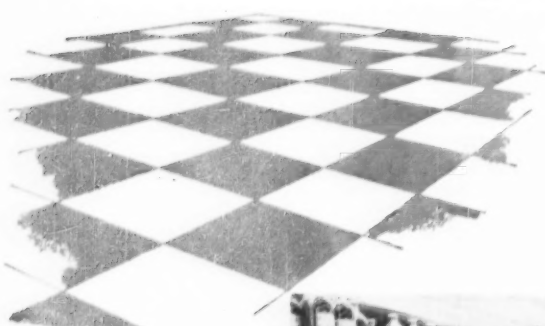
Accept no substitutes. Buy—and specify only Rust-Oleum. You'll be happy that you did.



Rust-Oleum dries to a firm, decorative coating that resists sun, fumes, salt water, heat, humidity, weathering. Available in most colors.

**Rust-Oleum is available in practically all colors, including aluminum and white**

See Sweets for complete catalog, or write for information. Prompt delivery from industrial distributor stocks.



**TAKES  
A LOT OF  
SQUARE  
FEET**



**to store cargo for Kroger's  
shopping cart fleet!**

Floor space — enough to hold over 24 football fields — that's how much storage area is covered by International Steel to keep Kroger shopping carts filled! Six huge Kroger warehouses furnished by International now serve this famous and fast-growing grocery chain. Strategically located in Fort Wayne, Indiana; Louisville, Kentucky, and Little Rock, Arkansas . . . in the Ohio cities of Toledo, Columbus, and Cincinnati . . . they combine over a *million square feet* of modern storage facility. And *all* structural steel and long-span joists for these six Kroger warehouses have been supplied by International Steel Company. Any time you are shopping for fabricated steel, any amount and for any purpose, put International Service first on your list. It pays many ways!

See Complete Catalogs in Sweet's  
Industrial Construction Files Nos. 2c and 7a



**INTERNATIONAL STEEL COMPANY**  
2109 EDGAR STREET • EVANSVILLE 7, INDIANA

soft through many launderings. A bag-maker would like wash-out inks that won't smear.

Dress and underwear manufacturers are still looking for a durable elastic.

A producer of electrical equipment would like a material with good electrical conductivity whose resistance would decrease instead of increase as temperature rises.

Finishing, corrosion resistance, and workability were frequently mentioned.

A metal products manufacturer asked for a sheet material that would cause less wear on drawing dies and other tools, and would also take a better buffed or plated finish.

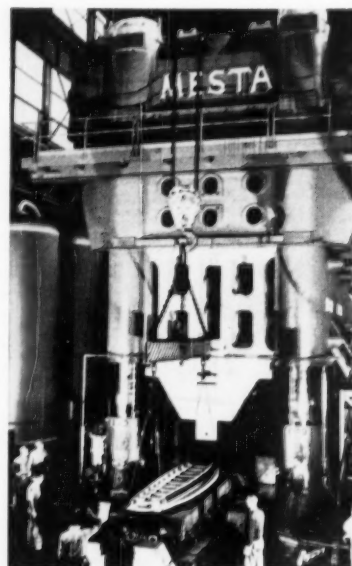
Another would like a "copper clad or coated sheet steel that can be drawn as easily as aluminum without marring the surface."

A third needs "a satisfactory one-coat baked enamel finish not requiring a primer."

A maker of outdoor cooking equipment says: "Our big problem is the oxidation that occurs on steel wire—even when it has been coated with tin, copper, or zinc."

A manufacturer of control instru-

ments wants "light, strong materials able to resist corrosion by prod-



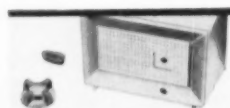
ALUMINUM COMPANY OF AMERICA

Fabrication costs loom ever larger as products become more complex and specifications more exacting. In metalworking, this may call for new machines like this forging press that can turn out huge sections in one piece. In chemical and food processing, it may mean reactors that will operate continuously at higher temperatures and pressures.



**TECHNIQUE OF**

**understanding  
PLASTICS**



Does your purchasing department consistently check its suppliers to be assured that they are "technologically up-to-date" or . . . simply rest assured in the fact that machines and equipment are available to meet production schedules?

**Watch Close . . .**

The plastic is quicker than the eye. Each resin has its own limitations, its own advantages. Toughness—Pliability—Hardness—Coloring—Flexibility and then Cost. Which combination of advantages in the molding of a component part will drive that product to the fore in a competitive market?

The plastics field is young and new and so are we of Lor-El; Young, new and aware of the continued surge of new types of plastics and advances in techniques and technology—

Why not try us today? A telephone call will do.

**COMPANY**

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Journal Square 2-4066





John W. Evers tells  
how Commonwealth Edison  
is preparing to supply

## atomic muscles for electric power

"The construction program of America's electric companies in the postwar years has been greater than that of any other industry," says John W. Evers, president of Commonwealth Edison Company.

"This, in itself, is a remarkable achievement. But, even *more* remarkable is the fact that, during the past quarter century, the cost of electricity to consumers has been reduced an average of 37%.

"Now Commonwealth Edison, with seven co-sponsors, is stepping out in an entirely new field . . . electric power from atomic fission.

"The project — the new Dresden Nuclear Power Station, located about 50 miles from Chicago — *is the largest all-nuclear power plant yet scheduled. It is being built entirely with private funds, at a cost of \$45 million.*"

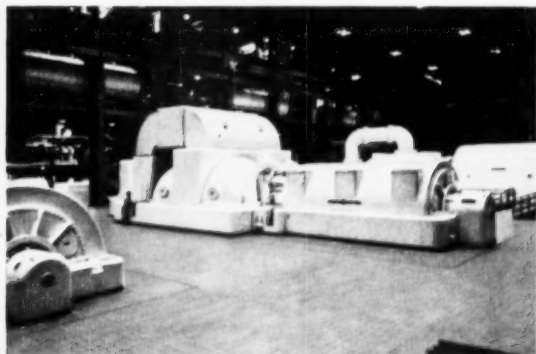
Wyandotte is proud to salute all the companies co-operating to harness electricity from the atom. Such positive, progressive action is in keeping with the American tradition of free enterprise. Wyandotte is a supplier of basic chemicals to Commonwealth Edison, and to important companies in practically every industry. May we serve you? *Wyandotte Chemicals Corporation, Wyandotte, Michigan. Offices in principal cities.*

## Wyandotte CHEMICALS

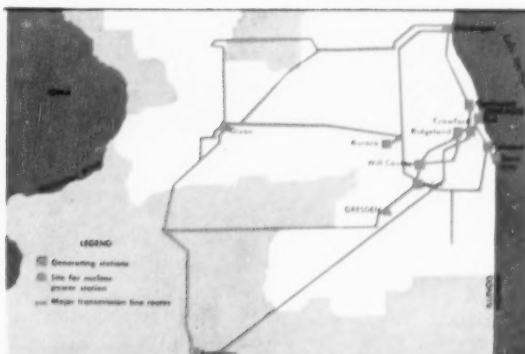
Organics, Inorganics — World's largest manufacturer of specialized cleaning products for business and industry



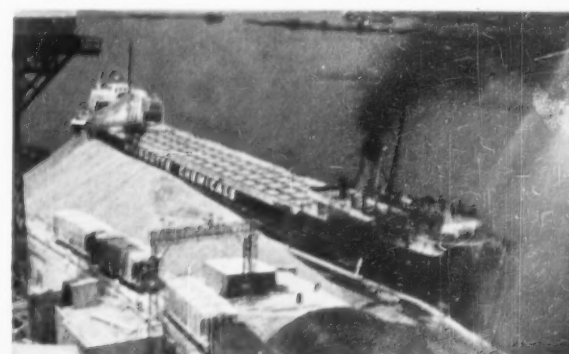
**1** John W. Evers, president of Commonwealth Edison Company, Chicago, Illinois, next to model of proposed \$45-million Dresden Nuclear Power Station. Commonwealth Edison will pay \$30 million, plus cost of site and overhead. Remaining \$15 million is to be paid as a research and development expense by the eight companies in the Nuclear Power Group, Inc.: American Gas and Electric Service Corporation, Bechtel Corporation, Central Illinois Light Company, Commonwealth Edison Company, Illinois Power Company, Kansas City Power & Light Company, Pacific Gas and Electric Company, and Union Electric Company.



**2** Giant turbines and generators at Commonwealth Edison's Ridgeland Station create power by means of steam. To prevent algae growth in condenser tubes, Commonwealth treats condensing water with Wyandotte Chlorine — a chemical basic to all types of water treatment, from drinking water to swimming pools.



**3** Commonwealth Edison's network of power stations serves many residential, rural, and heavy-industrial areas. Wyandotte Chemicals are at work here, too, in practically every industry you can name — from pulp and paper, glass, and rubber to petroleum, chemicals, cosmetics, and food products.



**4** Wyandotte freighters transport limestone from company-owned mines. Ownership of natural resources assures steady production, constant availability of essential chemicals. How about your business? If you're looking for a dependable source of chemical raw materials, call on Wyandotte.

# REVERE



# ...headquarters for Aluminum Brass Copper

To you, Mr. and Mrs. America, the name Revere means Revere Ware Copper-Clad Stainless Steel Cooking Utensils. More than likely you have some of these utensils hanging in your kitchen.

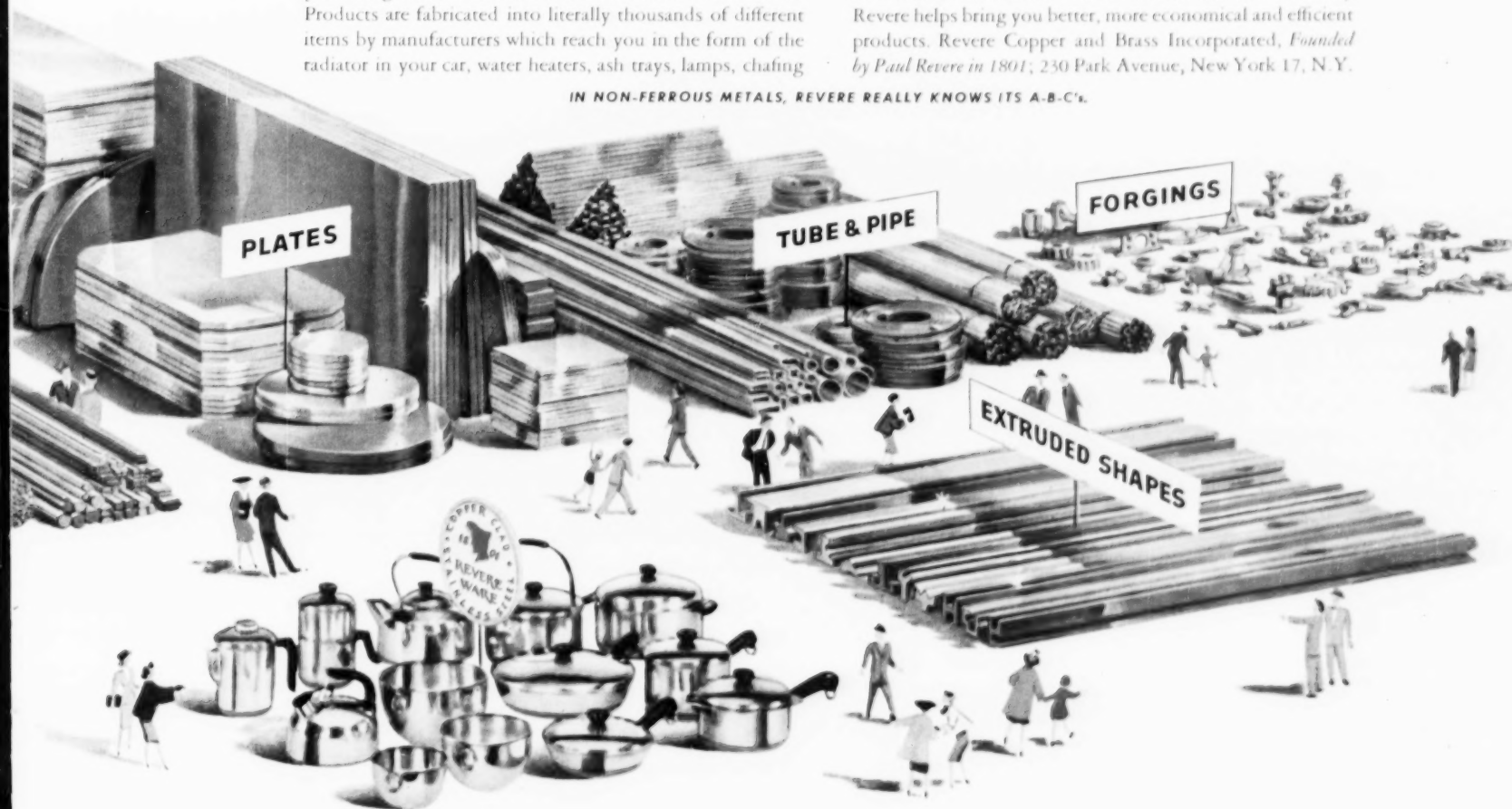
What you may not know is that among the manufacturers of America the name Revere is equally well-known for its mill products and semi-manufactured products of copper, brass and other copper base alloys, and aluminum alloys, steel and other metals.

You will find Revere Copper Water Tube, which is sold through distributors, in radiant panel heating systems, hot and cold water lines, air conditioning and industrial processing lines, waste, stack and vent lines. Other Revere Products are fabricated into literally thousands of different items by manufacturers which reach you in the form of the radiator in your car, water heaters, ash trays, lamps, chafing

dishes, safety razors, silverware, cameras, vacuum cleaners, even the brass tip on the lead pencil you use. In fact it is safe to say that every day of your life in some way you are being served by a Revere Product. There is no way for you to tell that there is a Revere Metal in your air conditioner, in your door chime or alarm clock, but Revere is there, incognito, helping to make your life a more enjoyable one.

For Revere not only furnishes the manufacturers of America with metals it also "gets into the act" production-wise through its Technical Advisory Service. It is this service that has made Revere, not a mere purveyor of metals, but an American institution. This in turn means that indirectly Revere helps bring you better, more economical and efficient products. Revere Copper and Brass Incorporated, *Founded by Paul Revere in 1801*; 230 Park Avenue, New York 17, N.Y.

IN NON-FERROUS METALS, REVERE REALLY KNOWS ITS A-B-C's.







*The Convention / by James Dwyer*

*"For further information, write..."*

There are many forms of business communication but the most potent of all, is still the letter.

A wide variety of Gilbert Quality Papers makes all written and many printed forms of business communication much more effective. There are crisp, cockle finish GILBERT BOND PAPERS of unmatched brightness for attention-getting letterheads and envelopes. Eye-appealing GILBERT ONIONSKIN PAPERS combine strength with light weight, ideal for air-mail stationery, copy sheets and postage-saving advertis-

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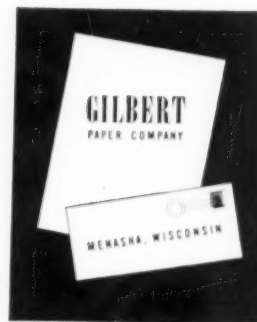
And, in addition to their uses in record work, GILBERT LEDGERS and INDEX BRISTOLS are ideal for parts lists, instruction sheets and diagrams.

Ask your printing supplier about Gilbert New Cotton Fibre Quality Papers.

## Gilbert Quality Papers

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A GOOD LETTER IS ALWAYS BETTER / WRITTEN ON A GILBERT BOND



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### NEW BOOKLET DESCRIBES LATEST USES FOR STRAITS TIN IN MAJOR INDUSTRIES



Send for your free copy now\*

New booklet contains up-to-the-minute information about one of our most useful metals—Straits Tin from Malaya. Explains how tin's properties help each major industry, gives specific examples of new applications solving manufacturing problems. Sixteen pages, fully illustrated, factual and concise.

\*Prepared especially for busy executives, materials selectors, design and production engineers. Your copy awaits your request.

#### The Malayan Tin Bureau

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Please send me a free copy of the new booklet, "STRAITS TIN FROM MALAYA, Its New Importance to American Industry."

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ucts of combustion as well as atmospheric corrosion."

The development of automatic processing equipment, the need to reduce materials handling costs, the desire to protect materials from contamination, and many other factors are leading fabricators to seek materials in new forms and in a greater variety of forms.

In metalworking, for instance, automatic stamping equipment calls for long, continuous coils rather than cut sheets (see page 66). Continuous processing in the chemical industry, as opposed to batch mixing, brings a need for pumpable liquids or fluidized solids in bulk form, rather than bags or blocks of material.

Great interest in safety and materials handling also poses new problems for suppliers. For example, rubber-processors and metal-casters want additives and alloying elements in pellet, capsule, and block form instead of as dusty, messy powders.

There is, of course, another side to this picture.

There are fads and trends in demand for materials, just as there are in products themselves. To-day's products are traveling light and the pressure for thinner sheets, lighter weights, and even for disposability is great.

But there are those who suggest—and perhaps with a good deal of foresight—that this is by no means a universal or irreversible trend; and that the day of the heavier product, the more durable casting,

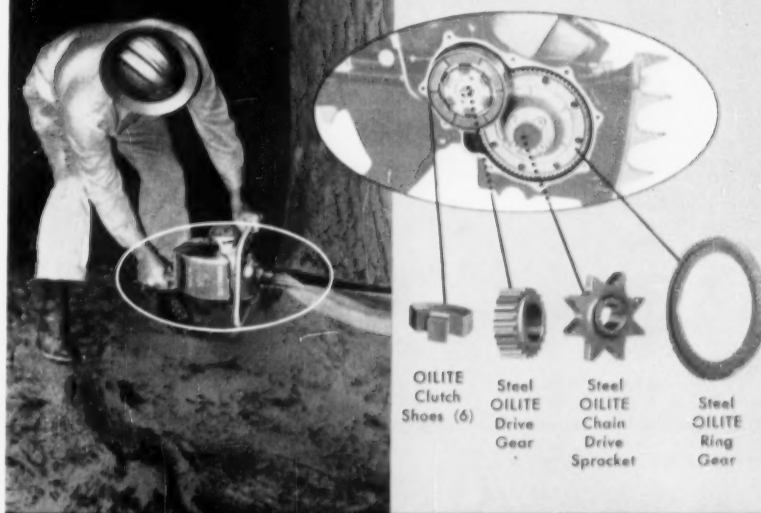


GENERAL ELECTRIC COMPANY

Design as well as fabrication methods needs restudy when new materials are to be used. For instance, when aluminum replaces copper in electrical conductors, their size must often be increased. That sometimes creates design problems. To permit use of aluminum here, new mounting, insulation, and cooling systems were developed.

## OILITE parts

in power saw  
resist wear  
better than steel  
and cost less



Another cost-saving application of  
**AMPLEX POWDER METALLURGY**

With a modern power saw—easy does it. It's easier on the inside, too, because this manufacturer has equipped vital components with extra tough, greater wear resistant OILITE precision parts. The manufacturer's report indicates that OILITE powder metal sprockets and gears offer greater wear resistance than alloy steels.

Furthermore, in using OILITE precision parts the manufacturer of the power saw realizes substantial cost savings over parts fabricated by any other process.

What this manufacturer is accomplishing with OILITE precision parts, you can too. Or, perhaps, in your case OILITE self-lubricating bearings and bearing materials can help you lick the problem of providing lubrication in hard-to-get-at places. In permanent metal filters, too, OILITE provides a wide choice of shapes, sizes and porosities to meet product requirements.

Amplex—volume producer of Chrysler-engineered powder metal components—can meet your production schedules with on-time deliveries in any quantity.

Helping solve the problem of others is a daily occurrence at Amplex. This Chrysler-Amplex engineering service is available to you too.



**Yours! Free!**

New 52-page OILITE Engineering Manual. Supplies valuable engineering data and application information on OILITE powder metal bearings, parts and filters. Ask for Manual E-56. Write: Dept. W.

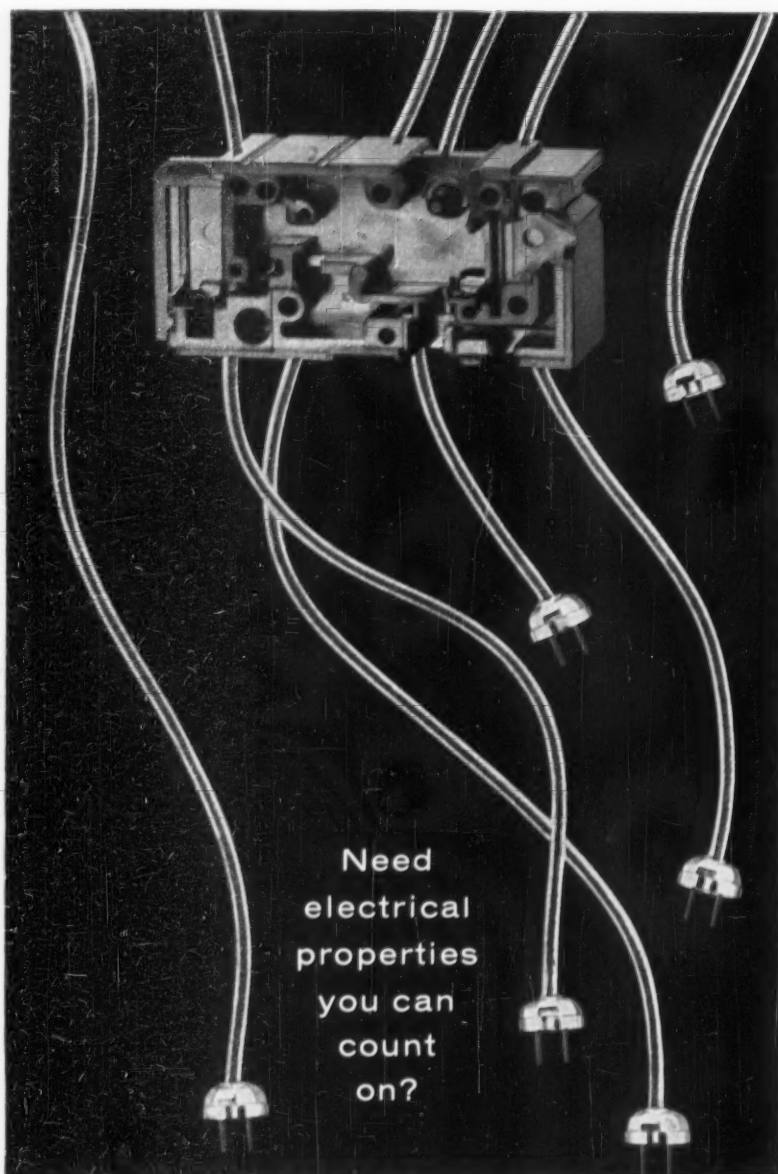
Representatives and dealers located in principal cities in United States and Canada.



Only Chrysler Makes OILITE  
**AMPLEX DIVISION**  
CHRYSLER CORPORATION • DETROIT 31, MICHIGAN

Bearings • Finished Machine Parts • Permanent Metal Filters • Friction Units





Need  
electrical  
properties  
you can  
count  
on?

## count on Plenco

Click, it's on—click, it's off. Multiply by several billion for the number of times this simple act takes place daily on our ultra-electrified planet.

In the modest switch-box as well as in the manufacture of countless other more intricate electrical parts...specifying Plenco phenolic compounds of durability and self-insulating qualities is the first order of business of many experienced molders. We invite you to make it yours.

Serving the plastics industry in the manufacture of high grade phenolic molding compounds, industrial resins and coating resins.



**PLASTICS  
ENGINEERING  
COMPANY**

Sheboygan, Wisconsin

and the metal rather than plastic escutcheon plate is by no means gone forever.

There is also reason to suspect that many of the "new" materials for which users say they are waiting need only be taken off the shelf. The sad truth seems to be that many users are unaware of recent materials developments. At least two producers of marine hardware, for instance, who say they want more corrosion-resistant metals, have not even considered titanium, a metal which is outstanding in this respect.

Part of the responsibility for this situation can certainly be laid at the door of the user. Asked how they keep up with new materials developments, less than a quarter of the respondents indicated that they had any system at all for investigating new and improved materials. Several frankly said they tried new materials "only when our customers demand them."

Among those who do make an effort to keep up, the most frequently mentioned sources of information are publications, technical society meetings, and suppliers' sales engineers, in that order.

Says a producer of power tools, "We read and read and read—and listen to any salesman who calls."

But, survey replies indicate, the doorbell doesn't ring often enough.

And the salesman who rings it is rarely as well informed about his products as the potential user would like him to be.

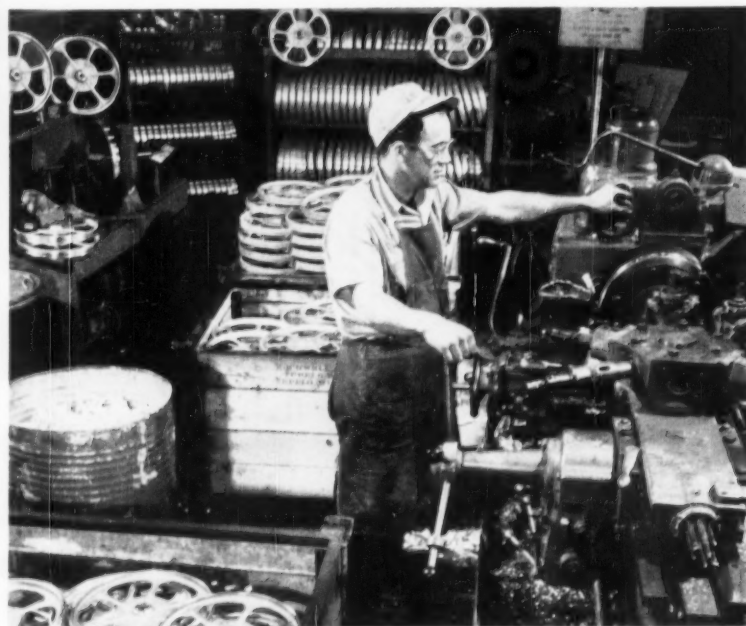
This brings up again the question of technical assistance. It is a problem which the suppliers recognize, and many admit that they have been somewhat remiss in this respect. But, they say, they can't afford to give personal service to every user and potential user. As one steel company executive put it, "A ton of steel still costs less than \$150, yet some of our customers seem to expect us to ship a metallurgist with every carload."

"We are doing what we can," he says, "by setting up new research and engineering laboratories and stepping up our publication of technical data. Still, users will have to do the specific application work themselves."

Therein, most likely, lies the answer to this problem as well as to many others in the materials field. If users as well as suppliers step up their activities—with the former trying harder to keep up, and the latter making more information available through more media—many of the difficulties now cited should disappear.

The checklist on the following pages offers a number of suggestions along these lines.

*Finding the Material, page 76*

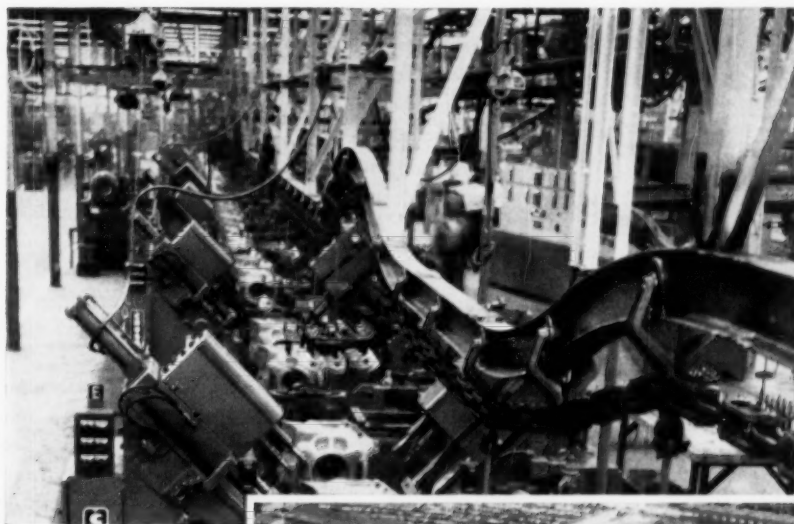


ROCKWELL MANUFACTURING COMPANY

Prejudice, based on experiences long past, keeps many fabricators from taking advantage of materials they could and should use. Magnesium, for instance, was a wily customer when first introduced. But much has been learned about handling it. Memories of early problems should not now hinder use of this lightweight metal in parts like these Delta bandsaw wheels.



## In the Spectacular PLYMOUTH ENGINE PLANT you see



(Above) View of Plymouth  
Engine assembly line



**VICKERS**

HYDRAULICS

Wherever  
You Look

Plymouth Engine Plant is 980' long and 500' wide. Indicative of its scope is crankshaft machining requiring 4500 linear feet of automation composed of 385 individual units. Plant capacity is 150 engines per hour.

In the new Plymouth "Qualimatic" Engine plant you see Vickers Hydraulics on every side. Hundreds of machines in this latest and greatest example of automation are Vickers equipped.

Both builders and users of production equipment appreciate the significant advantages of Vickers Hydraulics . . . advantages that help produce better products at lower cost.

A specific need in the Engine Plant is standardization on a few basic hydraulic units to keep down parts inventories. The Vickers line makes standardization easy. Also desirable are hydraulics in units quickly demountable . . . so that by replacing units, repairs on the job are avoided and costly downtime reduced. Vickers has extensively developed demountable unit construction.

Whether automated or not, more and more plants have more and more Vickers Hydraulics. For further information, write for Catalog 5002B.

### VICKERS HYDRAULICS is used on machines supplied by these Companies to Plymouth Engine Plant

American Broach & Machine Co.	Lees-Bradner Company
Barnes Drill Company	Michigan Drill Head Co.
Bilt-Rite Tool & Machine Co.	Micromatic Hone Corporation
Buhr Machine Tool Company	Micro-Poise Engineering & Sales Co.
Colonial Broach & Machine Co.	Modern Industrial Engineering Co.
Crankshaft Machine Company	The Match & Merryweather Machinery Co.
The Cross Company	Norton Company
Ex-Cell-O Corporation	A. P. Schraner Co.
Fitchburg Engineering Corp.	The Sheffield Corporation
Greenlee Bros. & Company	Snyder Tool & Engineering Co.
Industrial Metal Products	Sundstrand Machine Tool Co.
The LaPointe Machine Tool Co.	Jervis B. Webb Co.
Landis Tool Company	The Wickes Corp.
The R. K. LeBlond Machine Tool Co.	Wilson Automation Co.

### VICKERS INCORPORATED

DIVISION OF SPERRY RAND CORPORATION

ADMINISTRATIVE and ENGINEERING CENTER

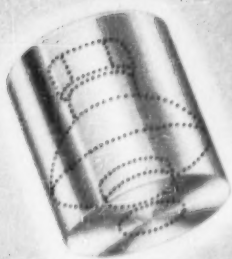
Department 1424 • Detroit 32, Michigan

ENGINEERS AND BUILDERS OF OIL HYDRAULIC EQUIPMENT SINCE 1921

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(Mt. Lebanon) • PORTLAND, ORE. • ROCHESTER • ROCKFORD • SAN FRANCISCO  
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IN CANADA: Vickers-Sperry of Canada, Ltd., Toronto

7545

# ZINC DIE CASTING ***SAVES***



BRASS SCREW MACHINE PART  
showing scrap loss



DIE CASTING  
designed for minimum metal usage

# 66%

IN  
PRODUCING  
A  
REAR-VIEW  
MIRROR  
COMPONENT

Much costly metal was completely lost (see diagram) when this rear-view mirror part was machined from brass bar stock. By redesigning the part for production as a zinc die casting, all scrap loss was completely eliminated. Furthermore, the flexibility of design in die casting permitted casting the part with a metal-saving recess to further reduce the cost. The zinc die casting was actually  $\frac{1}{3}$  the cost of the machined part.

While The New Jersey Zinc Company does no die casting, it supplies much of the zinc used in the die casting industry. For information on how this metal and method of production can lower the cost of your products, write for our booklet and contact any commercial die casting company.



**SEND FOR YOUR COPY** ➔



**THE NEW JERSEY ZINC COMPANY**  
160 Front Street New York 38, N. Y.

## MATERIALS

### *Finding the right material*

With the many new materials being introduced, and the old ones being improved, it is not easy to be sure that you have the one best material for your product to-day. This checklist can help you screen the new candidates, and decide whether to make the change.

Have you listed—in order of importance—the qualities that are needed for the product under consideration? (Is heat resistance more critical than washability? Is color as important as dimensional stability?)

Yes ☐ No ☐

Is there a yardstick (in terms of production costs or, perhaps, sales volume) by which you can measure the value of possible improvements?

Yes ☐ No ☐

Are you taking full advantage of all the good qualities of the material you now use?

Yes ☐ No ☐



SAMPLES FROM GRIES REPRODUCER CORPORATION

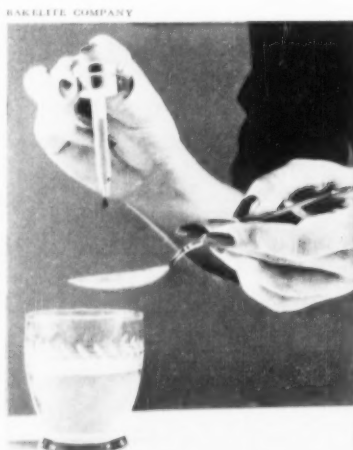
Fluidity plus rapid solidification make zinc a unique die casting material. Miniatures shown, and many machine parts, once designed as assemblies, can be produced complete in a single die closing by *Intercast* process, taking advantage of these special qualities. Arms and pin are cast in rapid succession as cores are pulled automatically. Pliers and scissors come out of die complete and operating. No assembly is needed.

Are there special problems which must be considered in choosing a material for this particular application? (Must it stand prolonged exposure to sunlight? salt water? heat? Does it need certification by such governmental agencies as the Food and Drug Administration?)

Yes ☐ No ☐

Would a new material permit design changes—perhaps even a radical departure—that would permit real savings in manufacturing or give a big boost to sales?

Yes ☐ No ☐



New approaches to old design problems are offered by many new materials. Controlled flexibility and moldability of polyethylene, for instance, make it possible for Lumelite Corporation to replace traditional eyedropper with this closure-and-pipette combination. Plastic also offers flexibility at low temperatures, chemical resistance, range of colors.

Have you listed all of the possible replacements or substitutes—including a few "wild possibilities," materials that might have been far too costly or difficult to handle in the past, but might soon be improved to the point where they are practical? Yes ☐ No ☐

Have you compared all the possible materials—old and new—in regard to:

- ☐ how much technical help is available from suppliers of the various materials under consideration?
- ☐ availability of each material in a sufficiently wide range of sizes, types, shapes, and colors without special processing or "extra" charges?
- ☐ relative value of scrap and ease of its reclamation?
- ☐ compatibility of the material with those which will surround it when it is assembled?

Will it take the same heating and finishing treatments?

Yes ☐ No ☐

Is there danger of setting up galvanic corrosion? Yes ☐ No ☐

Will its appearance blend with the materials around it? Yes ☐ No ☐

- ☐ availability of suitable fasteners and fastening methods?

Titanium fasteners can now be produced in quantity to meet exacting specifications. But it took quite a while to solve production problems. These lightweight, high-strength bolts are designed for aircraft use.



STANDARD PRESSED STEEL COMPANY

- ☐ ability to hold close tolerances?

- ☐ safety and ease of handling?

Are any special precautions required to protect workers?

Yes ☐ No ☐

Do the materials themselves require protection—highly-finished surfaces, for instance? Yes ☐ No ☐

- ☐ ease of fabrication?

Will new equipment be needed for any of these materials?

Yes ☐ No ☐

New tools, auxiliaries, or controls?

Yes ☐ No ☐

Can equipment costs be reduced by purchasing materials in semi-fabricated or fabricated form? Yes ☐ No ☐

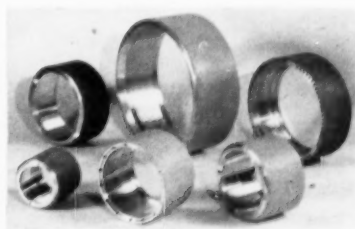
- ☐ special sales considerations?

Will any of these materials permit greater use of color? or better finishes? Yes ☐ No ☐

Do any of these materials have a "magic name," such as "plastic"? Yes ☐ No ☐

Have you considered combining materials to take advantage of the best qualities of each? Yes ☐ No ☐

Laminate-clad aluminum is new for heavy-duty hydraulic pistons. Made by bonding phenolic-impregnated fabric laminate to aluminum tubing, the material is strong and light in weight, has good dimensional stability.



SYNTHANE CORPORATION

Are you sure the material you plan to use is good enough for the job—but not too good? (In many materials, you pay a premium for qualities like heat resistance, non-flammability, and dimensional stability. If you do not need these qualities, you can often use a much less expensive type.)

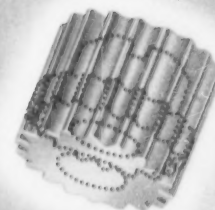
Yes ☐ No ☐

# BRASS POWDER

# ***SAVES***

# 92%

IN  
PRODUCING  
A  
RECORDER  
PINION  
GEAR



GEAR MACHINE PINION STOCK  
showing scrap loss



BRASS SINTERING  
in one operation.

This gear was formerly machined from pinion stock, involving turning, drilling, cut-off, milling and wire brushing operations. Total cost was 74c per gear. As a brass sintering the gear is now pressed into finished shape and size in one operation—plus the addition of flats to the pinion head—at a cost of 5.8c per gear—

## A SAVING OF 68¢ IN THE COST OF MANUFACTURE.

There's no need to hunt for information to realize appreciable savings for your products. You will find many case histories with authoritative and unbiased engineering data in "Facts About Pressed Brass and Other Nonferrous Powder Parts." Send for your copy today.

While The New Jersey Zinc Company does not make pressed powder parts, it does supply metal powders (brass, bronze, copper and nickel silver) to the fabricators of powder metal parts.



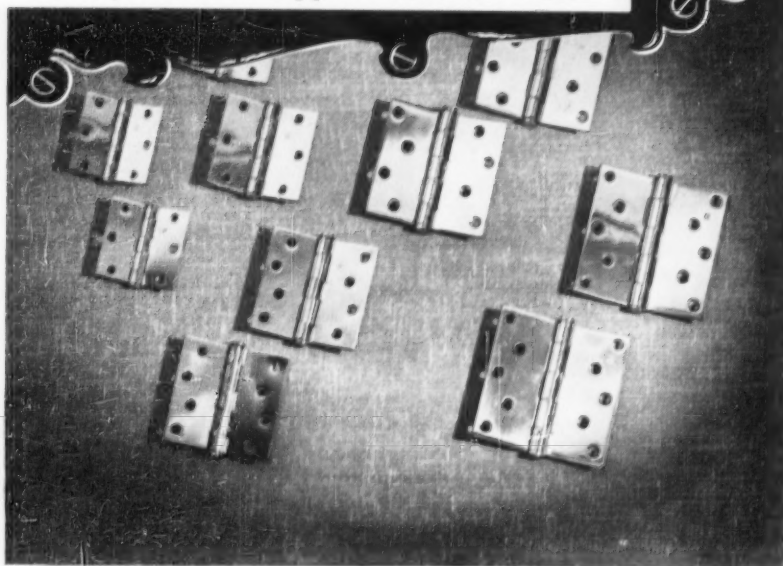
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**THE NEW JERSEY ZINC COMPANY**  
160 Front Street  
New York 38, N. Y.



**Start your sales appeal with the finish**



## Production HINGES on UDYLITE PLATING EQUIPMENT

Today, you find beautiful Hager Hinges in homes throughout America for this company has been making hinges of quality for more than one hundred years.

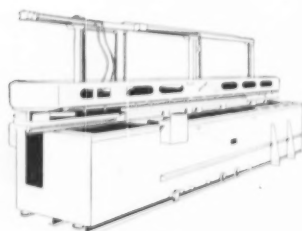
The modern hinge is vastly improved over the hand wrought hinges Hager made in grandfather's day. Today's traffic in schools, offices and homes requires tough, rugged hinges with finishes of gleaming beauty to withstand plenty of abuse.

Five years ago C. Hager & Sons of St. Louis, came to Udylyte with their finishing problem. Their requirements called for the most beautiful and durable finishes possible—the necessary protection from rust and corrosion and all this on a high production schedule.

Udylyte installed three automatic plating machines in the Hager plant—one each for cadmium, copper and brass plating. Beautiful hinges with gleaming finishes are now turned out at a rate of over twenty thousand per day.

With the Udylyte Automatics they are now assured of uniformity, high quality and big production. And as with other Udylyte machines, unit costs are down.

*... whatever your product  
whatever your metal finishing  
problem ... it pays to  
consult Udylyte.*



**World's Largest  
Plating Supplier**

## MATERIALS

Could you reduce over-all material costs—on old or new materials—by:

- ☐ greater care in specification—to make sure you are not paying for purity and precision you don't need?
- ☐ watching "extra" charges? (They sometimes add up to more than the base price of the material itself.)
- ☐ proper handling and storage to hold materials damage to a minimum?



HEFFENSTALL COMPANY

Special handling devices, like these automatic tongs, can do much to reduce product damage and materials waste. They often pay for themselves many times over in time-saving and in reducing accidents as well.

- ☐ changing the form in which materials are purchased—from drums to bulk, flat sheet to coil, raw to semifinished—to cut handling costs and reduce work, and waste, in your plant?
- ☐ redesigning parts to permit use of thinner sections and lighter weights?
- ☐ making use of waste materials like fly ash, pickle liquor, wood bark?
- ☐ taking advantage of prefinished materials—coated and embossed stock, and the like?

If a new material is chosen, have you been careful to select the specific type and processing method that is best for your product? Yes ☐ No ☐



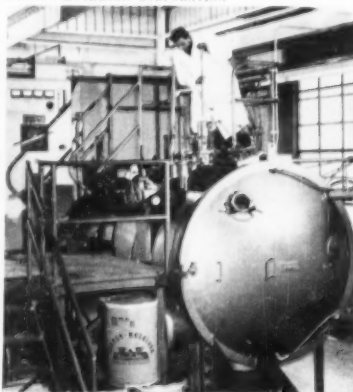
UDYLITE COMPANY



Each material offers its own special qualities. Both of these slippers are made of plastics, and both are comfortable, lightweight, moisture-resistant. But clog (left) needs rigidity of molded polyethylene; while vinyl plastic can be used for soft, flat sandal (right).

In assembling the information to answer questions like those above, have you tapped all possible sources: government agencies, trade associations and technical societies, consultants and industrial research laboratories, your own suppliers, other companies in your field? Yes ☐ No ☐

CANNON-MUNKSGOOD CORPORATION



High-purity metals, produced in vacuum-melting furnaces, bring new qualities to old materials, make new alloys possible. Commercial production of vacuum-melted alloys is but one of many recent developments that rate close attention by manufacturers who want to make and market better parts and products.

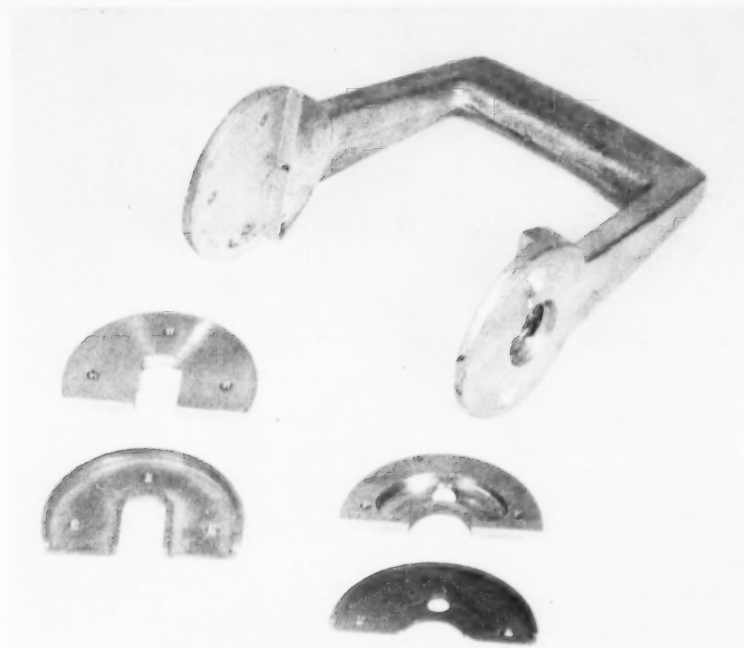
## Design changes that save

New production methods, rather than brand-new materials, are the key to money-saving design changes at Ansul Chemical Company, as they can be in many plants. By adjusting product designs to permit use of materials in the most economical form, Ansul saves more than \$30,000 a year on the three items pictured here.

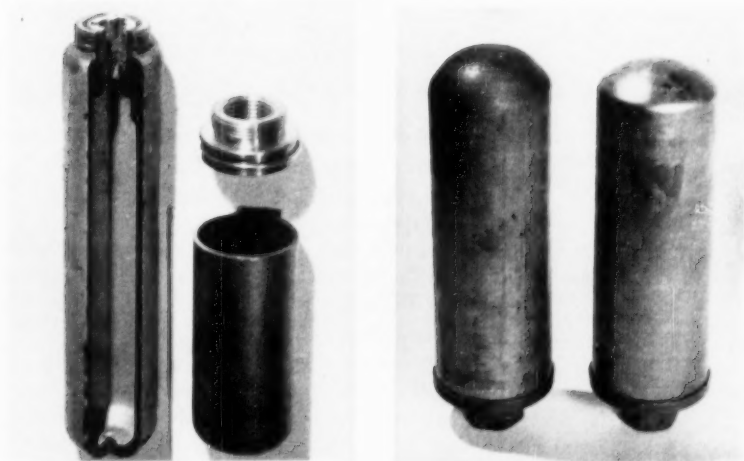
For example, the actuating handle for Ansul's *Dualstream* dry chemical fire extinguisher nozzle (photograph below) incorporates two semicircular indicating plates.

Originally, they were produced on an automatic screw machine, and required secondary machining. Now converted to short-run stampings, they cost \$15,000 less a year.

Each problem requires its own solution, as the two lower pictures prove. In one case, Ansul racks up big savings by making a one-piece item in two separate but simpler parts. In the other, a new production method that combines once-separate pieces is the key to cost reduction.



Stampings (semicircular parts at right) prove far less costly than machined indicating plates (at left) for Ansul *Dualstream* nozzle handle.



Drawn shell and machined head (right) are far less costly than one-piece unit of forged seamless tubing.

Similar savings are achieved by converting this two-piece drier shell into one-piece drawn cylinder.

*One Industry's Needs, page 78*

## This is ALAN WOOD STEEL—



**Steelmasters  
for 130 years**

**IRON PRODUCTS**  
"Swede" Pig Iron

**STEEL PRODUCTS**  
Plates (sheared)  
A. W. Dynalloy  
(high strength steel)  
Hot Rolled Sheets  
Hot Rolled Strip  
Cold Rolled Sheets  
Cold Rolled Strip

**ROLLED STEEL FLOOR  
PLATE**  
A. W. Algrip abrasive  
A. W. Super-Diamond  
pattern

**A. W. CUT NAILS**  
Standard & Hardened

**MINE PRODUCTS**  
Iron Ore Concentrates  
Iron Powder  
Crushed Stone  
Grit  
Sand & Engine Sand

**COKE**  
Foundry, Industrial &  
Metallurgical

**COAL CHEMICALS**  
Ammonium Sulphate  
Benzol  
Toluol  
Xylol  
Naphthalene  
Sodium Phenolate  
Tar Bases (Pyridene)  
Solvent Naphtha  
Crude Still Residue

**PENCO METAL PRODUCTS  
DIVISION**  
Steel Cabinets,  
Lockers & Shelving

## SIZE...

Large enough to have made an important contribution to the nation's industry . . . small enough to provide individualized service to its customers—that's Alan Wood's modern, flexible and fully integrated operation.

In ten years, Alan Wood has expended nearly \$50,000,000 for additions and improvements, including a new blooming mill, continuous hot strip mill, picklers, modernized plate mill, cold reduction mill and annealing furnaces, plus other improvements.

Alan Wood expects to continue its growth—carefully, steadily—to provide more individualized services to more customers.

For information on Alan Wood Steel and its products, write Marketing Division—Department AW-45.

## ALAN WOOD STEEL COMPANY

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A. C. Leslie & Co., Limited.

# MATERIALS

## One industry's needs

... and how they affect you

ONE PRODUCT to-day takes half the rayon produced in this country, and a fifth of the steel. It uses tons of aluminum, copper, and zinc, and millions of gallons of paint. It takes nearly 40 per cent of all the radios, and it is a major consumer of light bulbs, detergents, dyes, and hundreds of other materials from beeswax to bicarbonate of soda.

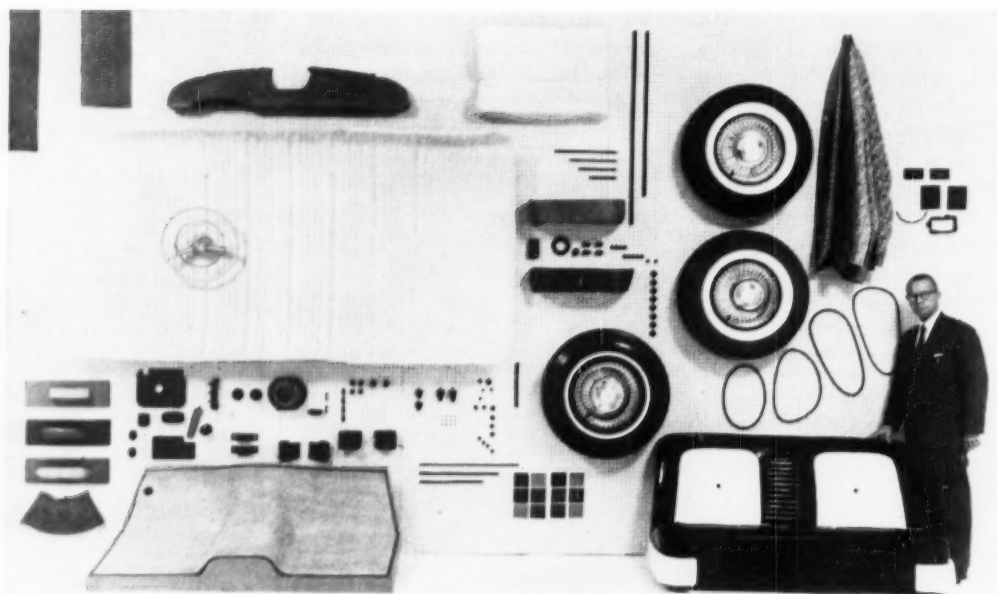
The product, of course, is the automobile. So great are its needs that, no matter what you make—clothing, toys, gears, or guns—its fortunes affect your business. You'll want to study the auto industry not only as a possible customer, but also as a competitor for materials, and, in some cases, a source of new materials.

Even if your only connection with the automobile is as a passenger, the auto rates close attention because somewhere in your own field there is an industry or a product that has a similar far-reaching effect.

To-day, the auto industry uses well over 200 different materials, coming from all over the world (see diagram).

Are you in the textile industry? The automobile not only uses half of all the rayon, but also millions of yards of cotton fabrics. Until the conversion from cotton to rayon tire cord (see page 59), it was cotton's number one customer. Even now, though, it's still high on the list, using cotton fabrics for upholstery, flooring and headlining. And even a minor change in any one of these can still have a tremendous impact. Take the headlining as an example.

Assuming a production of five million cars a



U. S. RUBBER COMPANY

Hundreds of materials are used in passenger cars, in quantities from a few ounces to hundreds of pounds. Pictured here are one company's rubber and plastic automotive products—a hundred and thirty-two of them—including new formed plastic headlining (left center) and foamed plastic bedding.

year (well below the average of the past five years), car headlinings alone would require about 30,000 bales of cotton—some 15 million pounds.

Suppose the auto industry decided not to use fabric for lining the interior of the roof; chose, instead, some other material. Last year, one com-

pany, Plymouth, did just that. It introduced a vacuum-formed plastic headlining (see photograph, above) in its *Suburban* model. Were the entire industry to follow suit, it would mean another loss for textiles and a big gain for plastics. As a matter of fact, it would just about double the auto industry's plastics consumption. The average car now has about 250 plastics parts, but their total weight is only a little more than ten pounds, while the weight of the headlining alone is nearly that much.

It's not likely that this particular innovation will be adopted by all companies for all models right away, but increased use of plastics for car linings and upholstery is certainly in the cards.

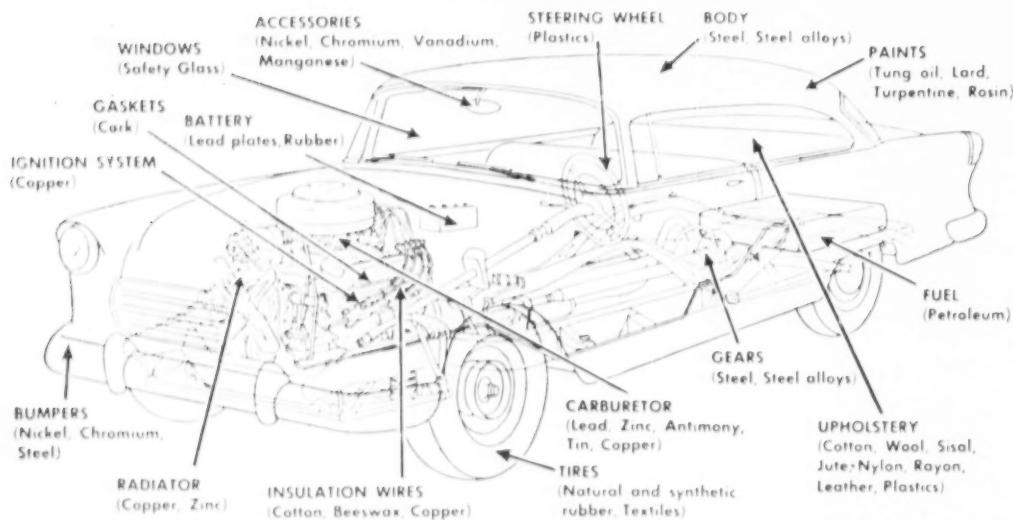
In the years since the Korean war the auto industry has been taking about 20 per cent of total steel production. Last year, though, it was 26 per cent; while, in the first half of this year, it fell to less than 17 per cent. Result: The construction industry and industrial machinery took up some of the slack. But, until the strike, industry's pipelines were filling, and the supply picture was beginning to look brighter than it had for a long time.

The deeper one digs into the materials end-use picture, the more apparent the industrial interrelationships become. Apricot and peach pits, for instance, help in blast cleaning electrical equipment and plastics parts.

There is sugar in synthetic rubber, and salt in steel.

When it comes to alcohol, the bar fly is a

## HOW THE WORLD'S RESOURCES ARE USED IN A MODERN AUTOMOBILE



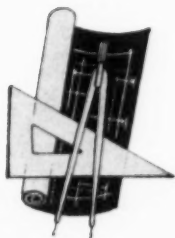
AUTOMOBILE MANUFACTURERS ASSOCIATION

Every continent is tapped to supply the auto industry. Solder, for instance, uses antimony from Alaska and Bolivia, tin from Malaya, lead from Africa and Australia, as well as domestic metals.



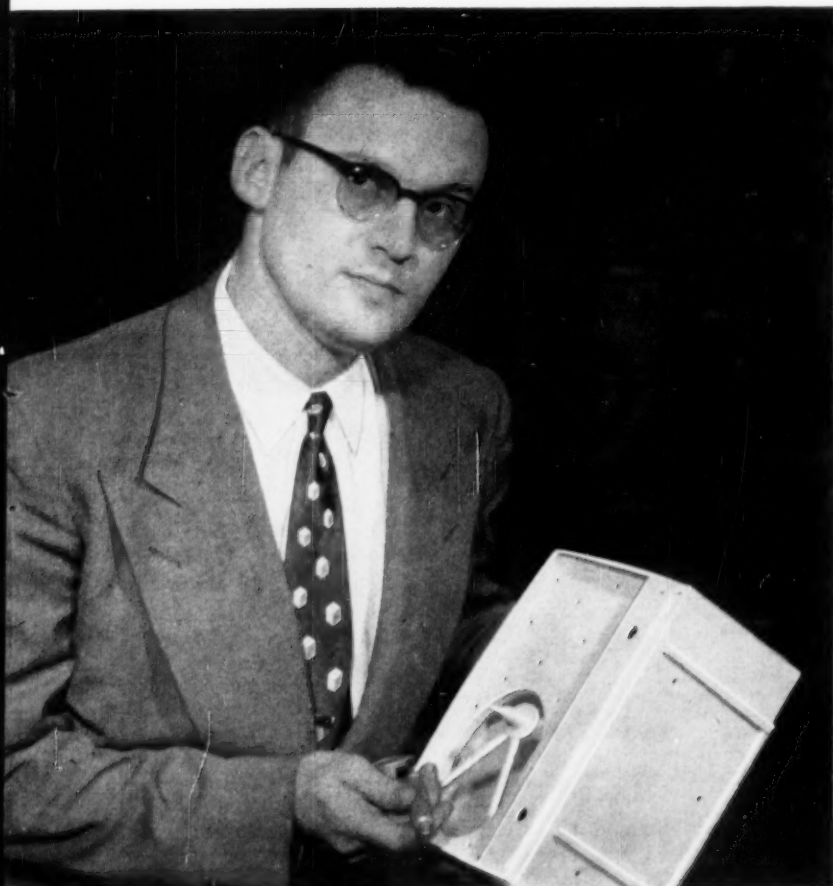
# Craftsmen of the 20<sup>th</sup> Century

No. 19 of a series to introduce you to some of industry's outstanding plastics craftsmen



The artisan has traditionally been moved by the desire to master a material. In the old days the inspiration came from gold and silver, steel and stone. Today, new materials are at hand—but the challenge has not changed. The same priceless skills are now working with the fabulous family of plastics to produce articles by the million that can serve every industry, every home. Two of these 20th Century craftsmen are pictured on this page. Monsanto, a major producer of high-quality plastic materials, salutes these men who are helping to mold America's tomorrow.

When your plans call for plastic parts or products, consult an expert custom molder



**Robert H. Hoehn, Mack Molding Company, Wayne, N. J.** There are complete tools to produce approximately 3000 different plastic molded parts at Mack Molding's Wayne plant. Mr. Hoehn has been responsible for the design of a great many of them. Chief Engineer at Mack for the past 10 years, Bob at 36 is one of the youngest old-timers in the Plastics Engineering field. He currently is responsible for Cost Estimating, Tool Design and Procurement, Product Design and Molding Equipment Design activities at Mack. During World War II, Bob was responsible for the production of the famous M-52 plastic fuse used by Army Ordnance in Mortar shells. More recently he has assisted the country's leading manufacturers in the design of plastic components for the Refrigeration, Packaging, Radio & Television Industries. His most recent development is a 200-ton automatic molding machine that ejects finished molded articles completely ready for delivery to the customer. Vice President of the Newark, N. J. Chapter of S.P.E., Mr. Hoehn has authored several valuable papers on complex plastic molding problems for leading plastic technical publications.



**Mr. Leslie H. Cone, Diemolding Corporation, Canastota, N. Y.** Twenty-seven years ago, Leslie Cone joined Diemolding Corporation as a draftsman. Today he is Chief Engineer, responsible for the conception of each molding job.

Says Mr. Cone, "Deciding on the most economical size, type and design of the mold to satisfy the customer is a major job. We know, for example, that production requiring a cored hole on the side of about  $\frac{1}{4}$ " diameter would most economically be produced by the transfer method. But many other questions can be answered only through tests and constant experimentation." Production of molded parts for airplane ignition and ordnance, as well as a wide variety of cooking utensils, calls for molds that may cost up to \$30,000. Tolerances of .002 are not unusual.

Mr. Cone feels that "the plastics field has hardly touched the surface of its potential. With the continued improvement of materials and molding techniques, plastics promise to soon be an integral part of fields not even considered today."

MONSANTO CHEMICAL COMPANY  
PLASTICS DIVISION, SPRINGFIELD 2, MASS.



*Monsanto is a major supplier of plastic molding compounds, including RESINOX phenolic, LUSTREX styrene and Monsanto polyethylene.*



**UNEQUALLED ECONOMY and FLEXIBILITY in INSTALLATION and OPERATION**

2 good reasons why  
**TOTE SYSTEM\***  
 has made more BULK  
 INSTALLATIONS than any other concern  
 in the MATERIAL HANDLING field

Tote System is a *complete* bulk materials handling system built around easily handled and transported aluminum containers, plus automatic filling and discharging equipment.

Compared with handling systems based on stationary bins, Tote System is more economical to install. (One user estimated his saving on Tote as opposed to silos and necessary conveying equipment at approximately \$100,000.) Tote System is highly flexible—can be readily adapted to changes in plant layout. And Tote System requires no more labor to operate than so-called push button silo systems.

Compared with handling systems using conventional containers, Tote System saves time and labor; container costs; storage costs; losses due to weather and deterioration; losses due to spillage, sifting and dusting; losses due to rodents and insects; original product quality.

Tote System is now being used by hundreds of manufacturers and processors for inter-plant shipment of materials; for in-plant storage and handling; for accurate and automatic weighing and blending.

If you handle bulk materials, why not let Tote System engineers determine, without obligation, the savings you can effect.

**TOTE SYSTEM, inc.**

610 So. 7th BEATRICE, NEBRASKA

\*  
 Tote and  
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minor consumer. Less than 5 per cent of our total alcohol production goes for direct human consumption. By far the largest amount is used in making paints and lacquers, rubber, textiles, and many other uses by industry for a wide range of products, including automobiles.

As the headlining example indicates, and these interrelationships show, the auto industry holds both a threat and a promise in its use of materials. A loss for one supplier is often a gain for another.

The auto industry is a tempting market. Even the smaller auto companies count production in six figures, and when they adopt a new material or a new type of gear, sales

can run into a goodly volume.

But, the same factors that make the auto industry worth courting also make it a dangerous one on which to depend. It is so easy to put too many of one's eggs in this particular basket—and to get caught short when auto production drops or the pendulum swings to new materials or products. That's why any company which plans to sell this market, or others like it, would do well to make a special effort, at the same time, to cultivate the smaller but often more dependable outlets in other industries that can serve as a backlog if the big one gets away. There is safety in diversification of customers as well as of products.



DOEHLER-TARVIS DIVISION, NATIONAL LEAD COMPANY

New markets open for aluminum as auto industry adopts it for battery cables, fuel pumps, and automatic transmissions (lower photo); tests die-cast engine blocks (top photo). Use has more than doubled in five years.

# SPECIAL REPORTS ON FINISHING NON-FERROUS METALS

## NUMBER III—Lustrous, Corrosion-Resistant Finishing with Chemical Polishing Iridite

### WHAT IS IRIDITE?<sup>®</sup>

Briefly, Iridite is the tradename for a specialized line of chromate conversion finishes. They are generally applied by dip, some by brush or spray, at or near room temperature, with automatic equipment or manual finishing facilities. During application, a chemical reaction occurs that produces a thin (.00002" max.) gel-like, complex chromate film of a non-porous nature on the surface of the metal. This film is an integral part of the metal itself, thus cannot flake, chip or peel. No special equipment, exhaust systems or specially trained personnel are required.

Chromate conversion coatings are widely accepted throughout industry as an economical means of providing corrosion protection, a good base for paint and decorative finishes for non-ferrous metals. Certain of these coatings also possess chemical polishing abilities that have luster-producing, as well as corrosion-inhibiting, effects on zinc and cadmium plate, zinc die castings and copper alloys. However, continued developments in this field have been so rapid that many manufacturers may not be completely aware of the breadth of application of this type of finish. Hence, this discussion of the many ways in which this chemical polishing characteristic can be used in final finishing or pre-plating treatments to produce a lustrous appearance with distinct display and sales appeal and appreciable savings in cost. Report I on decorative, corrosion-resistant finishes and Report II on paint base corrosion-resistant finishes are available on request.

The degree of luster possible on a surface is a function of the degree to which the surface can be smoothed. Leveling to provide a smooth surface can be achieved by mechanical or chemical means, or a combination of these, depending upon the luster desired and the original condition of the metal. Chemical polishing effectively imparts luster otherwise difficult and costly to obtain. For this reason, it is often used to supplement or entirely replace mechanical polishing, depending upon the application and the original condition of the metal. Chemical polishing has the additional advantage of providing overall treatment of the submerged part. It reaches into even the deepest corners and recesses that are otherwise inaccessible. Certain of the Iridites are specifically designed to perform this chemical polishing operation. Also, they provide corrosion protection as do all Iridites, thus may be used as a final finish or a pre-plating polish.

If Iridite is to be used as a final finish, in contrast to pre-plating treatment, the chromate conversion coating generated is allowed to remain, providing good corrosion resistance. Color inherent in these Iridite films ranges from a yellow cast to yellow iridescent. These coatings may be used without further treatment where this color is acceptable and good corrosion resistance is desired. Further, these basic coatings can be tinted by dyeing. Among the dye tints available are shades of red, yellow, blue and green. If desirable, the basic coatings can also be modified by a bleach dip leaving a clear bright or blue iridescent finish. In all cases bleaching reduces corrosion resistance.

As examples of this type of final finishing, Iridites #4-73 and #4-75 (Cast-Zinc-Brite) make possible for the first time, lustrous chemical polishing of the as-cast surface of zinc die castings. Thus, in many cases, sizeable savings in finishing cost are realized by elimination of plating costs. This economical method can be used on tools, appliance parts, toy pistols, locks and many other small castings. Another example is the treatment of copper and brass parts, such as welding tips, to eliminate buffing and provide additional corrosion resistance. In many cases, handling costs are reduced appreciably by replacing piece-part handling with bulk processing. Still another example of the use of this chemical polishing and protective quality of Iridite is a simple system of zinc plate, Iridite and clear lacquer instead of more costly electroplated finishes. Typical of this type of lustrous finish are builders hardware and wire goods.

As a pre-plating treatment, in contrast to final finishes, Iridite can be used to chemically polish zinc die castings or copper prior to plating. In such cases, Iridite should be applied as an in-process step, so that the protective film is removed before the plating cycle. The savings in hand-

ling, material and labor costs are obvious. This process has made it practical to plate chrome directly over copper on steel, conserving nickel, yet producing a lustrous chrome finish. Used after stripping faulty plate in reprocessing zinc die castings, Iridite restores luster to the casting, thus making possible replating without blistering.

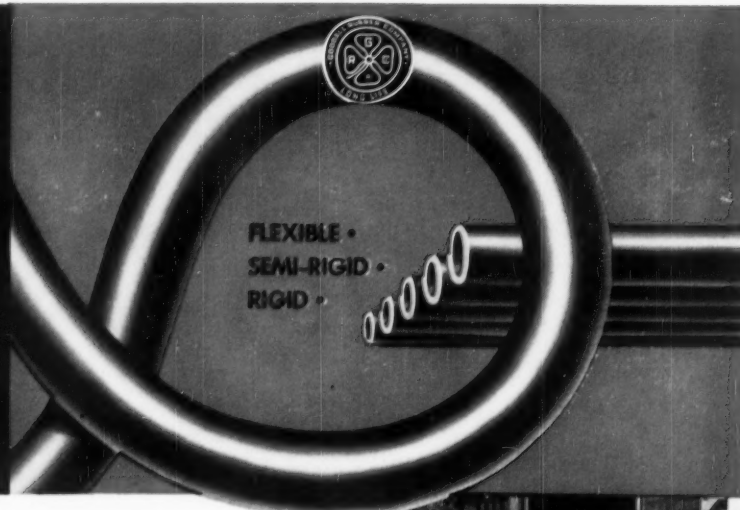
Other Iridite finishes are available to produce maximum corrosion resistance, a wide variety of decorative finishes and excellent bases for paint on all commercial forms of the more commonly used non-ferrous metals. As a final finish, appearance ranges from clear bright to olive drab and brown and many films can be bleached or dyed. As a paint base Iridite provides excellent initial and retentive paint adhesion and a self-healing property which protects bare metal if exposed by scratching. Iridites have low electrical resistance. Some can be soldered and welded. The Iridite film itself does not affect the dimensional stability of close tolerance parts.

Iridites are widely approved under both Armed Services and industrial specifications because of their top performance, low cost and savings of materials and equipment.

You can see then, that with the many factors to be considered, selection of the Iridite best suited to your product demands the services of a specialist. That's why Allied maintains a staff of competent Field Engineers—to help you select the Iridite to make your installation most efficient in improving the quality of your product. You'll find your Allied Field Engineer listed under "Plating Supplies" in your classified telephone book. Or, write direct and tell us your problem. Complete literature and data, as well as sample part processing, is available. Allied Research Products, Inc., 4004-06 East Monument Street, Baltimore 5, Maryland.



# GOODALL *"Long-Life"* PLASTIC PIPE



*Made to Prove That There Can be a Difference  
... in Plastic Pipe Quality and Service!*

"Long-Life" PLASTIC PIPE is made in three types... Flexible, Rigid and Semi-Rigid. Each is produced in our own plants, from the most desirable basic materials under exacting quality control. Absolute uniformity in every characteristic is assured.

Goodall Rubber Company is a member of the Thermoplastic Pipe Division, Society of the Plastic Industry. Our Standard Wall Pipe conforms to Commercial Standard CS-197-54, developed by the trade and issued by the U. S. Department of Commerce. "Long-Life" Plastic Pipe has been approved and certified nontoxic by the National Sanitary Foundation.

**FLEXIBLE TYPE.** "Long-Life" Flexible Plastic Pipe is made of virgin Polyethylene plastic to which a small percentage of inert black pigment filler has been added to prevent deterioration from ultra violet rays. Available in a complete range of sizes, in 75 lb. and 100 lb. job rated, and standard wall thicknesses.

"Long-Life" Flexible Plastic Pipe is light in weight, tough and durable. Its glass-smooth surface results in low flow-resistance and prevents accumulation of deposits. It is impervious to a wide variety of acids, alkalies, salts and other chemicals. It offers highest resistance to rot and corrosion.

**Connections.** These are made by using plastic or metal fittings, with clamps tightened by screwdriver. The pipe is easily cut with knife or saw.

**RIGID TYPE.** This "Long-Life" Plastic Pipe is a compound of unplasticized Polyvinyl Chloride (PVC) having properties which are very desirable in a wide range of industrial applications, primarily where high chemical resistance to organic and inorganic acids, alkalies, salts, alcohols, oxidizing agents, oils, greases and other corrosive materials is required, at temperatures up to 150° F. Typical uses include sour crude oil lines, salt water disposal, cold water lines, chemical plant piping, acid and gas fume vent lines. It has exceptionally high impact and tensile strengths, wide operating temperature range, reliable dimensional stability, and excellent weathering properties. Sizes from ½" to 12", in schedules 40, 80 and 120. NOTE: This pipe will not support combustion.

**Connections.** "Long-Life" PVC Pipe can be connected with threaded, solvent-cemented or welded fittings. It threads readily with standard hand pipe tools or any pipe-threading machine.

**SEMI-RIGID TYPE.** "Long-Life" Semi-Rigid Plastic Pipe is the Cellulose Acetate Butyrate type, with properties appropriate to many applications. Somewhat lower in cost than PVC Rigid Pipe, it is used for many of the same purposes where the high impact and tensile strengths of the PVC type are not necessary.



## Mail Coupon for Illustrated Catalog

GOODALL RUBBER COMPANY \_\_\_\_\_ Date \_\_\_\_\_  
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Branches and Distributors Throughout the United States and in Canada

## NEW METHODS & MATERIALS

... ANNESTA R. GARDNER

### *Pumps and turbines, plastics and textiles that blaze new trails to profits*

#### *ABC's of the new fibers*

*Acrilan ... Arnel ... Creslan  
... Darlan ... Marlex ... Verel  
... Zefran ...*

Do you know what they are and how they're related to other synthetic fibers? Here's a quick run-down:

*Acrilan:* An acrylic fiber, related to Orlon and Dynel, and midway between them in many of its properties. Acrilan is made by Chemstrand. So far, it has been used mainly in apparel.

*Arnel:* A cellulose triacetate fiber, Arnel was developed by Celanese to combine the advantages of familiar acetate fibers (dyeability, for instance), with improved launderability and wrinkle resistance. It is available in continuous filament

and spun yarns, and may have industrial as well as apparel uses, particularly in electrical tapes.

*Creslan:* Also an acrylic fiber, with both apparel and industrial possibilities, this one is just emerging from the laboratory at American Cyanamid. Staple fiber (the short lengths suitable for use in wool-type fabrics) and tow (continuous-filament bundles) will be available in limited quantities this year. Full production is planned for mid-1958.

*Darlan:* Though similar in many ways to the acrylics, this Goodrich fiber is a dinitrile rather than an acrylonitrile polymer. It is in the semi-works stage, and is being tested in sweaters, jerseys, suit fabrics, blankets, and fur-like pile materials.

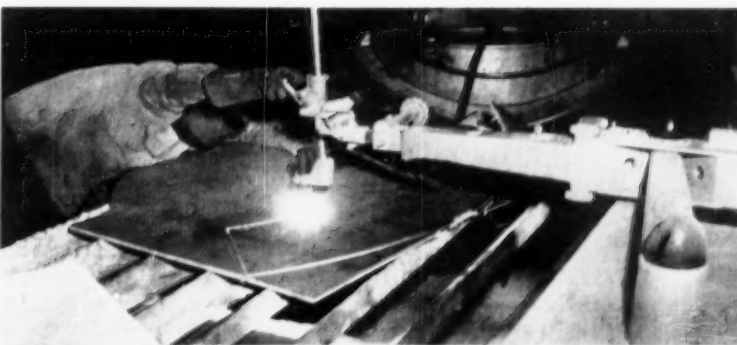
*Marlex 50:* Made from Phillips

Petroleum Company's new "linear" (low-pressure) polyethylene resin, this fiber is reported to be boilable, light in weight, strong, and weather-resistant. Multifilament yarns are being tested in upholstery and drapery, filter cloths, and velveteen-type fabrics. Monofilaments may be used in plastics laminates, tarpaulins, netting, and ropes. Yarns made from staple fiber are now being evaluated.

*Verel:* Still another entry in the acrylic field, this fiber is being introduced by Eastman Chemical in staple rather than filament form. It is described as "having outstanding value in selected fields of use—not an all-purpose fiber," and is said to be dyeable and flame-resistant. Moisture content is fairly high; wrinkle recovery good. It is being

#### *Taking a fast bite*

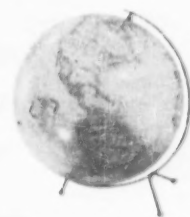
When *Heliarc* cutting was substituted for manual chipping on this Graver aluminum tank car dome, a one-hour job turned into a one-minute breeze. Cutting the stiffener pads (bottom photograph) used to take two men nearly half an hour. Now the job is done by one man in less than three minutes. Linde Air Products, which developed the *Heliarc* inert gas-shielded arc technique for shaping nonferrous metals (see November 1955, page 67), says it can be used on aluminum sheet up to one and a half inches thick, and can also be applied to copper and magnesium.



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tested in both industrial and consumer applications.

*Zefran*: This is the name for Dow Chemical's long-heralded textile fiber that's said to offer dyeability, dimensional stability, and wear resistance. Commercial production is scheduled for early 1958.

In addition to these, there are two strictly industrial fibers that rate special mention: *Teflon fiber*, the fluorocarbon noted for its heat resistance that is now moving into applications ranging from bearings (see July, page 61) to filter cloths; and *Fortisan 36*, a high-strength, weather-resistant, cellulosic specifically designed for such industrial products as V-beltting, high-pressure hose, plastic laminates, and tarpaulins.

More new fibers have been introduced in the past few years than in almost all of the history before them. No one is perfect. But each offers specific advantages for specific applications, and all rate consideration.

### How to do it with diamonds

When it comes to meeting close tolerances on dimensions and surface finish, diamonds can be the shop's best friend.

Diamond tools, used for both direct cutting and drilling, and for shaping grinding wheels, have scored remarkable results.

But preparation of diamond tools has been an exacting job calling for a high degree of skill, and diamond tool settings have been such that the expensive diamond was rather

like an iceberg, with the usable portion being only a small part of the stone.

Now, new setting techniques and new machines for shaping diamond cutting tips promise to make this type of tool really competitive on a wide variety of jobs.

Unveiled for the first time at a recent ASTE-Armour Research Foundation conference on shaped diamond cutting tools was a new machine developed at the Diamond Research Laboratory in South Africa to permit relatively unskilled workmen to cut and shape diamond tools from a wide variety of stones. This machine is now available commercially in the United States, and is priced at less than \$6,000. (Name of British builder and American distributor on request.)

### Ceramics cut, too

Diamonds are by no means the only non-metallic cutting materials available to industry. Ceramic tool tips (see November 1955, page 72) are coming up fast.

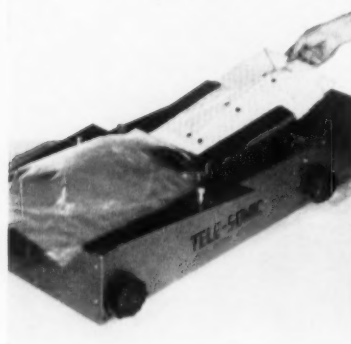
Norton Company and G.E.'s Metallurgical Products Division started commercial production of ceramic tool tips last year. Now, Raybestos-Manhattan is entering the field with its *Keramik* tools which, R-M says, are the first to have the ceramic tip actually bonded to the tool shank. Another newcomer is Sintox, Inc., which is producing an oxide-type cutting material developed in England.

Technology is moving so fast in



### They lend a helping hand

Among the new table-top machines that can take much of the drudgery out of everyday jobs are the two pictured here. One, a new folding machine, made by Davidson Corporation, "will produce any modification of four basic folds in paper stocks ranging from light manifold sheets to cardboard." The



model shown is priced under \$400. The other machine (above) is one of a series, priced from \$225 to \$500, designed by Tele-Sonic Packaging Corporation for bagging garments, toys, foods, hardware, and similar products. Bags are positioned automatically, and guide channels simplify insertion.

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than ever to specify

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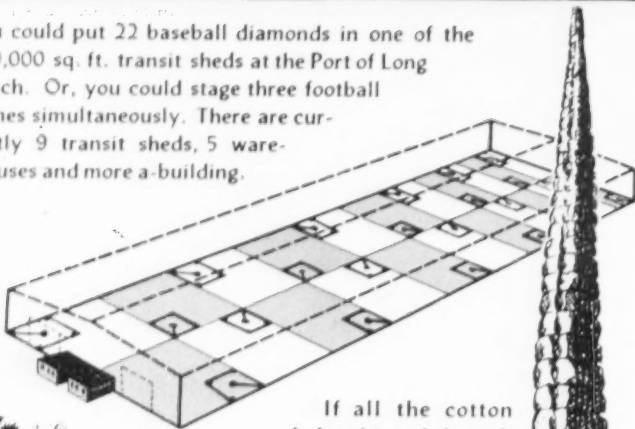
**Wirebound**  
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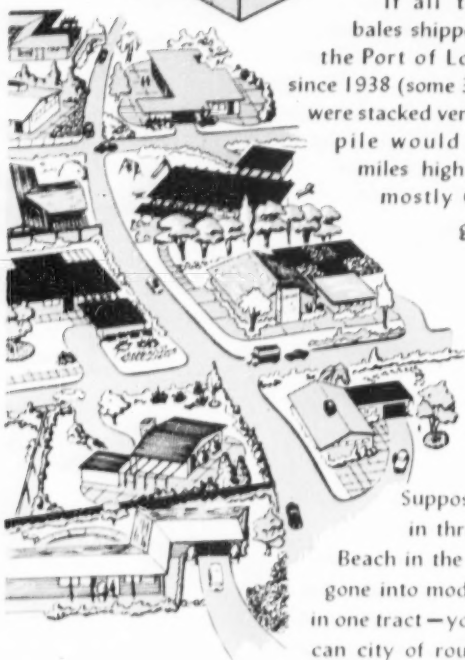
Room 1151 • 327 South La Salle Street • Chicago 4, Illinois

## It's Fabulously True!

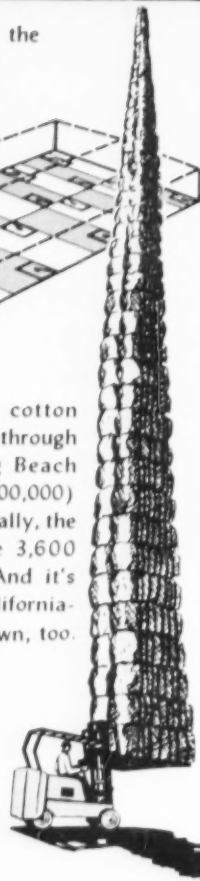
You could put 22 baseball diamonds in one of the 180,000 sq. ft. transit sheds at the Port of Long Beach. Or, you could stage three football games simultaneously. There are currently 9 transit sheds, 5 warehouses and more a-building.



If all the cotton bales shipped through the Port of Long Beach since 1938 (some 3,800,000) were stacked vertically, the pile would be 3,600 miles high. And it's mostly California-grown, too.



Suppose the lumber shipped in through the Port of Long Beach in the past 30 years had all gone into modern 3-bedroom homes in one tract—you'd have a new American city of roughly 1,000,000 souls.



## LOOKING FOR A PLANT SITE?

There are at least twelve reasons for locating your new plant in the Long Beach Harbor area. Included are:

- Rich market area
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- Lowest electric rates
- Cheap gas
- Abundant water supply
- Profit-making climate
- Better living
- Low taxes
- Available raw materials
- Transportation savings
- Economic stability
- Most modern port

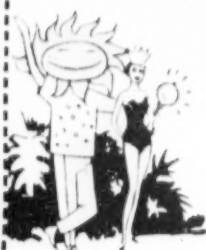
### FREE LITERATURE

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- ☐ Please send NEW color brochure on industrial Long Beach.
- ☐ Send me your quarterly Port news magazine, "Harbor Highlights"

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**LONG BEACH, CALIFORNIA**



this field that any technical publication is likely to be out of date even before it is published. But a good deal of useful background information may be found in the recently-released *Minutes of a Symposium on Ceramic Cutting Tools* held at Watertown Arsenal last year. The publication is *Report PB 111757*, obtainable from the Office of Technical Services, Department of Commerce, Washington 25, D.C., for \$3.25.

### Three for Mg

Welcome a new primary producer to the magnesium metal field. Brooks and Perkins, Inc., a leading fabricator of this light metal, and Dominion Magnesium, Ltd., Canadian producer, have joined hands to form Alabama Metallurgical Corporation which will build and operate a \$7 million ferrosilicon-process plant. Rated capacity of the plant is to be 10,000 tons of high-purity magnesium, and AMC hopes to have it in operation by the end of 1957.

### In brief

**Flexible surfacing material** for tables and work benches combines a protective layer of Mylar, the tough new transparent polyester film with a vinyl base and fiber backing. Called *Bolta-Top*, it can

be applied with adhesive, is easily cut and shaped.

**New flaw detectors** for checking rod and tubing and a device for measuring elasticity and damping characteristics of materials are among a score of new and redesigned instruments being unveiled this month by Magnaflux Corporation.

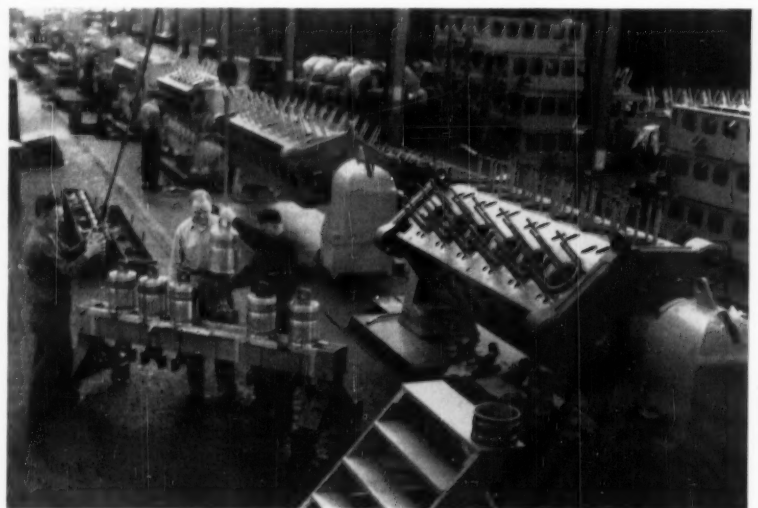
**Free training course** in gage block calibration is offered by The Do-All Company. Do-All also has a new booklet, *How to be your own Bureau of Standards*, outlining calibration procedures.

**Industrial tractors** and materials handling will be covered in a new quarterly publication, *Ford Industrial Tractor Power*, free of charge to equipment users.

**Portable high vacuum pump** for vacuum distillation, impregnation, coating, and mass spectrometer use, is made by Kinney Division, New York Air Brake Company.

**Suction pyrometer** for measuring temperature of fast-moving gases is said to be accurate over full range from zero to 2,900° Fahrenheit. It's made by Fielden Instrument Division of Robertshaw-Fulton.

*More news on page 92*



### Diesels de luxe

A new production setup that puts manufacture of industrial Diesels on an assembly-line basis is proudly displayed by ALCO Products, Inc. The engines it turns out have many new features, too, and are designed for ease of maintenance as well as production. Known

as the 251 series, the engines are of cast-weld construction, with a minimum number of separate parts. They have water-cooled turbosuperchargers and enclosed fuel systems. Several models (6-, 12-, and 16-cylinder) are made, for propulsion, pumping, and drilling.



## Your employees *see, breathe* and *feel* better in a "humanized" metal factory by **Butler**

Butler "daylight" factories just naturally boost morale. Workers never complain of eyestrain. Cheery, natural daylight streams through the low-cost Butler Lite® Panels in the roof illuminating *everything*.

There are no flat ceilings to hold down hot, stale air. In a Butler factory, air rises naturally to the pitched roof and escapes through peak ventilators. Air is constantly fresh at work levels.

A Butler insulated building can be heated or air-conditioned more efficiently than conventional structures. Heating or cooling units can be smaller . . . fuel and power costs are lower.

Post-free interiors provide unobstructed vision, wider aisles and better placement of machinery to give workers maximum freedom to move and work.

All these advantages, and more, are inherent in the building itself. But this is no ordinary building, it's a new management tool — a new concept in construction that is upsetting traditional notions of how a factory should be built . . . what it really is . . . and what it should do.



A Butler metal factory building costs less and can be erected weeks faster than conventional structures. Of all industrial buildings, it can be expanded easiest and most economically.

Be sure to get the full story from your nearby Butler Builder. (See "Buildings" in the Yellow Pages of your phone book or write to Butler). Ask him to show you the new Butler factory planning film.

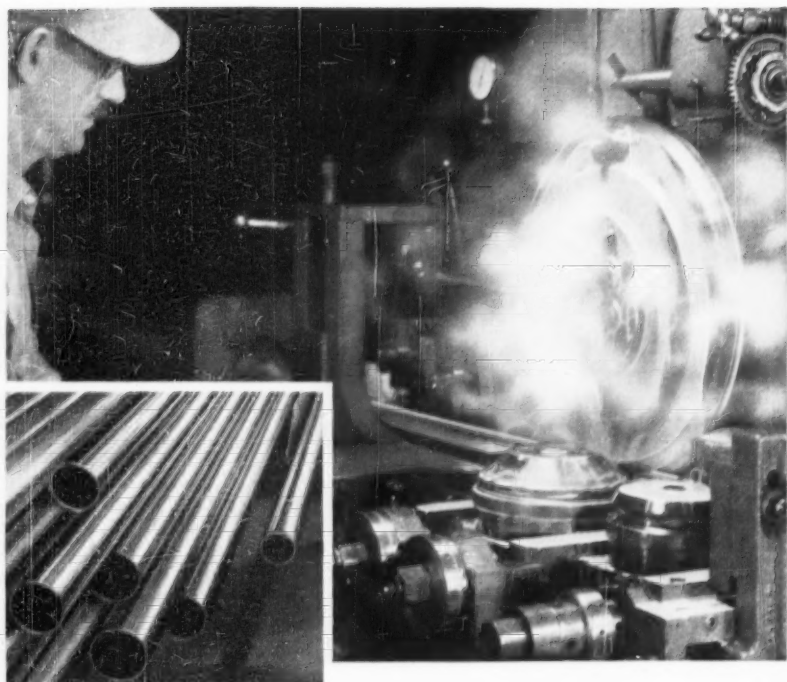


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## IN ELECTRIC-WELD PIPE AND TUBE MAKING

**Yoder leads the way to higher speeds and quality at lower cost**

● In the short period from 1938 to 1955, the production of electric welded pipe and tubing grew from 269,000 tons to over 3,000,000 tons. This phenomenal rate of growth—over two and one-half times faster than that of the pipe and tube making industry as a whole—to a large extent resulted from a series of important improvements in tube mill design, all introduced by Yoder.

First came the Yoder rotating welding transformer, in 1938. The economic and other benefits conferred by this epoch making innovation were further augmented by other technological advances scored by Yoder in the years that followed. The result was that electric-weld pipe and tube making became the child prodigy of the fast growing pipe and tube making industry.

Latest, and perhaps the greatest, of

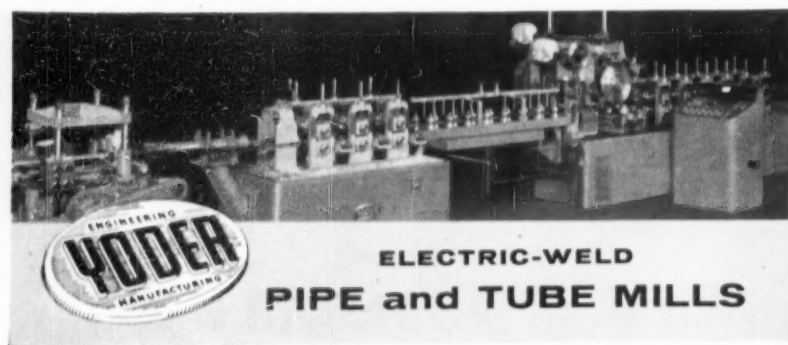
these developments is the cold forming and induction welding at high speeds of *aluminum, magnesium, brass, nickel, monel, and other non-ferrous metals and alloys*. This process is especially economical for making light and medium gauge tubes in sizes up to 8 in. dia. More and more leading non-ferrous metal producers and fabricators are installing these mills.

More complete information about this and other interesting Yoder developments in pipe and tube mill equipment may be had merely by asking for any of the following publications:

- ☐ Resistance-Weld Mills for making Steel Tubing up to 4" diameter.
- ☐ Induction-Weld Mills for making Non-ferrous Tubing.
- ☐ Resistance-Weld Mills for Steel Pipe up to 24" diameter.

### THE YODER COMPANY

5531 Walworth Ave. • Cleveland 2, Ohio



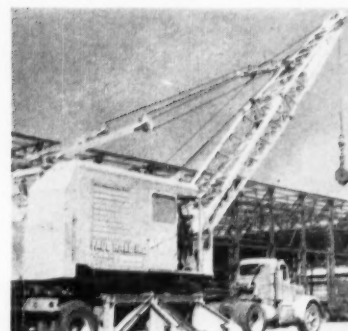
## NEW METHODS & MATERIALS

### *Machines that do more*



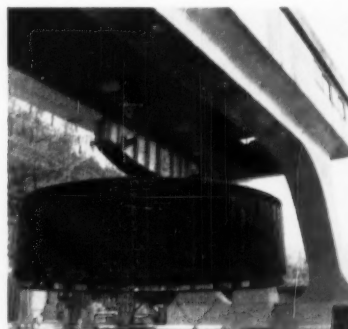
**HEFTY CRANE** has Manitowoc superstructure mounted on Mack tractor with Talbert Mobile-Crane mount. Talbert says it can lift more than 60 tons at a 16½-foot radius; yet is transportable over the highway in most states. Boom can be extended to 140 feet, and a 45-foot jib can be used.

**GIANT RAM TRUCK**, built for British steel company by Automatic Transportation, can revolve load as it travels, wind loose ends of steel coils, and up-end coils so they can be stacked vertically. Rated capacity is 70,000 pounds, but it can be increased to 100,000.



**BIG BULLDOZER** pushes bombers around as though they were single-seaters, can remove crashed planes in minutes instead of hours. This is the largest unit of its kind, but similar LeTourneau equipment is obtainable for industrial and construction jobs.

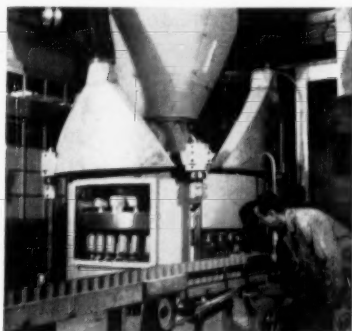
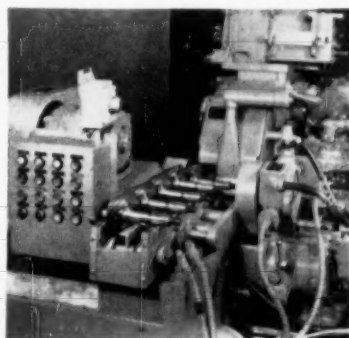
**DOUBLE-DUTY TURBINE** at TVA's Hiwassee Dam serves as pump as well as generator, is believed to be the world's largest. Allis-Chalmers says it could, in a single day, handle three times as much water as is used by the City of New York.



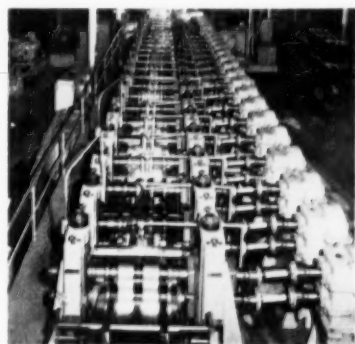
**LIGHTWEIGHT HEAVYWEIGHTS** are these Continental pumps used by Dowell in its oil well service. The engines, patterned after World War II tank propulsion units, make extensive use of magnesium to reduce weight and simplify mounting and transportation.

Production records to topple in every direction as industry brings out bigger and better machines. Here is a sampling of the latest. For news of other record-breakers see May 1954, page 35, and June 1956, page 49.

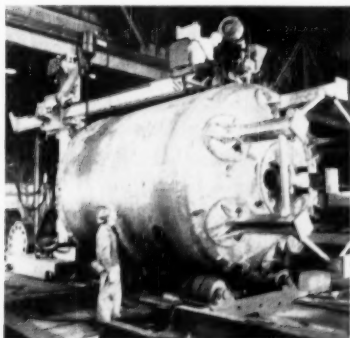
**AUTOMATIC GRINDER** positions, machines, and unloads stem pinions, eliminates fatiguing manual operations, speeds production. It has interlock controls to assure proper sequencing, and wheel is trued at preset intervals. Norton Company designed and built it.



**AUTOMATIC FILLER** for powdered foods, soaps, chemicals, is adjustable for metal or fiber cans  $4\frac{3}{4}$  to 7 inches high. Bin has fluffer to prevent caking and bridging. Potter and Johnston, the manufacturer, says it can handle as many as 300 one-pound a minute.

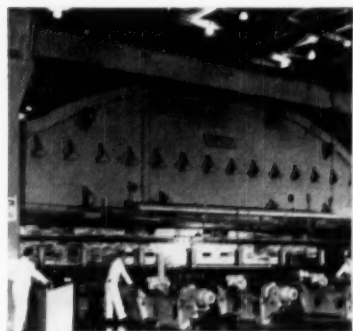


**LONG COLD FORMERS** go to work at Inland Steel Products, shaping metal strip for the company's *Milcor* roof deck and cellular steel flooring. Inland production line also incorporates automatic spot welding machine and flow-coat finishing equipment.



**BOOM-MOUNTED WELDER** lets Dravo operator keep a close check on his work. It saves time too, by making it unnecessary for him to shift his position. Workpiece (here, a viscose blender) rotates on power-driven rollers as seams are worked.

**MAMMOTH BRAKE** has photoelectric ram tilt controls, an automatic feed table, and many other advanced features. Working length is 44 feet, stroke 24 inches, capacity 1,800 tons. Verson Allsteel Press Company, the builder, believes the machine is the biggest of its kind.



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## MIDDLE BUSINESS

Continued from page 54

A sales contest winner who gets a self-winding water and shock-resistant Seamaster will wear it with enviable pride. Priced from \$95 to \$400.

What more perfect way to reward 10 years of faithful service than with an exquisite Omega Diamond Watch? Gold and platinum models, \$125 to \$9500.



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Modern management has learned that the "heart" of a well-planned award or incentive program is a fine watch.

Each year, more and more of America's great companies select Omega... because the recipient knows that Omega is world-acclaimed for accuracy attested by countless awards from great international timing observatories... by its selection again and again for 23 years as official watch of the Olympic Games.

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of the  
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Name..... Title.....  
Company..... Address.....  
City..... Zone..... State.....

tions. Outside accountants can be valuable consultants—for they have contact with what other concerns are doing about matters as diverse as pension plans and advertising costs. Yet accountants often remark that their clients are not aware of their readiness to offer such counsel.

Talent, outside or inside a business, is important to any organization. The enthusiasm generated by working toward a common goal releases the hidden talents of all those who are involved.

#### 2. Adaptability and Adaptation.

The long term prospects of the American economy are almost staggering. Research, productivity, population growth, national wealth, and an unparalleled standard of living virtually guarantee a consistent growth in the economy for as far ahead as we can see.

Nevertheless, a free economy such as ours runs into periodic moments of adjustment, when business must pause and mark time or even go a step backward while gathering energy for the next forward surge. The same is true of individual businesses. In the business world, there is no such thing as a consistent rate of motion.

American industry is unsurpassed for its ability to produce goods of high performance at relatively low cost. But when cost and production problems have been solved, and it seems that we simply cannot offer better values, we still run into slack periods in demand. This is the time when phrases such as "market saturation" or "obtaining a share of the market" are coined. It is also the time when tired managements begin to think in terms of shading quality and cutting price.

I don't know just what the phrase "obtaining a share of the market" really means. Neither did the contract manufacturer of precision parts who decided to begin to produce vacuum cleaners immediately after the last war. At that time the 45-year-old vacuum cleaner industry was in the doldrums. By a combination of new design, bold promotion, and different sales methods than were then prevalent, this manufacturer broke into the industry and became one of its leaders.

Complacency regarding product or methods of distribution have no

place in marketing. The time to look ahead to change is just when present methods and products are producing best results. Not that wholly sweeping changes are to be recommended. As a matter of fact, the authorities insist that radical changes in product and in method of operation are often unwise. Perhaps the automobile industry offers an outstanding example—it is always working on the design of its next model three years ahead.

The forward looking management which has as its goal the continuing steady rise in its sales curve will be on the constant lookout for ways to adapt its methods and merchandise to new use patterns. Ordinarily, appliance dealers would not regard the Arctic as a good market for refrigerators. We did hear of a salesman, however, who sold refrigerators to the Eskimos—not to freeze foods, but to keep them from freezing. This might be a classic example of product adaptation.

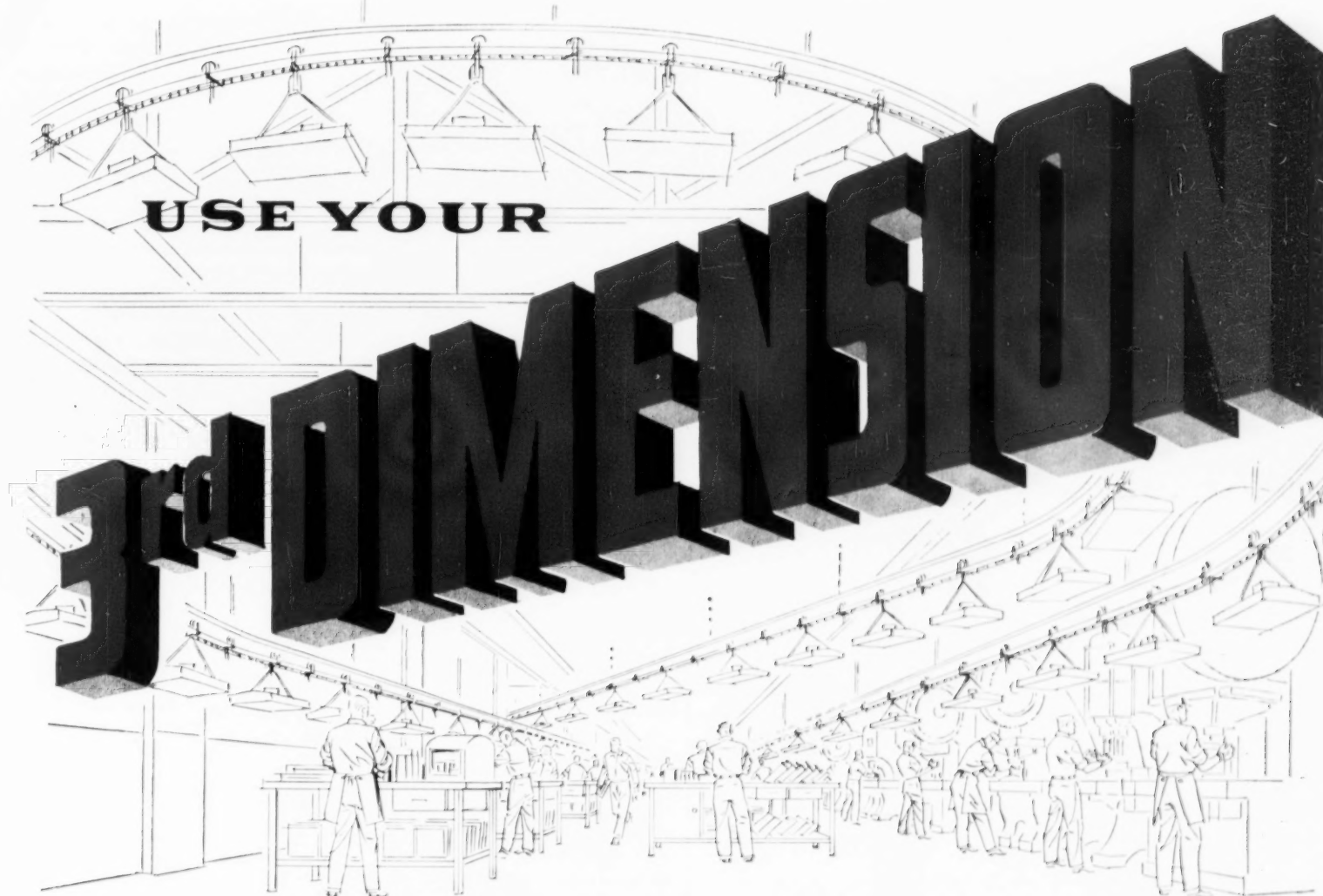
Cake mixes, packaged cereals, plywood interior panels, aluminum rods for home work-shops, paint appliques, precooked frozen foods, frozen fruit concentrates—these are but a few of the thousands of illustrations of product adaptation to new uses. New industries have grown around them. What is a home air conditioning unit but an adaptation of an electric fan and a refrigerating unit?

A manufacturer of Christmas tree ornaments begins to produce its own wiring for lighting sets. Eventually, the production of thermoplastic insulated wire becomes one of its own major sources of income. A manufacturer of plastics gets into the toy business. A manufacturer of lumber which once found wood chips a source of waste now sells them to pulp mills. These are but a reflection of the way in which ingenuity pays off in sales.

Product adaptation need not represent a complicated proposition, nor result from startling innovations created at the drafting board. Take a prosaic thing like table salt. Years ago, you bought it in a paper bag. You couldn't use it in damp weather. To-day, the salt people make salt which pours, no matter what the weather.

Not too long ago, one manufac-





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DRM-V-56

turer went even further, coming out with a miniature cardboard and plastic container. This shaker might be out of place for a formal, full-course dinner, but it is wonderfully useful for picnics and outdoor cooking. Little of the price, perhaps, represents the cost of the salt, but people are willing to pay a little more just for the convenience.

### Short-Term Payoff

Sometimes, of course, adaptation pays off temporarily, following which the ore from the new vein runs out. During 1945, a manufacturer of photographic chemicals took some tri-sodium phosphate home to his wife during what was then a period of soap shortage. She was so enthusiastic about the product as a household cleaner that he decided to package the detergent.

His company realized a \$300,000 net profit the following year. Then, the established soap companies began to market their own improved detergents. Our manufacturer, being heavily committed by now, began to incur sizable losses. At this point, the wise decision was made to get out of the detergent business while remaining in the field in which the manufacturer's abilities were outstanding. That manufacturer continues to earn a nice 6 per cent on sales of photographic chemicals, while detergents remain for him a closed book.

### 3. Changes in Marketing.

Adaptability is a spark plug for stepped up sales when applied to marketing and distribution methods just as effectively as it is in product design and usage. Four years ago, a manufacturer of facial tissues found sales heading for a 16 per cent decline. Competition was pinching. After the executives went into a huddle, they came out with some important decisions. First, a new and convenient pocket package was designed for the chain store market. Second, advertising expenditures were stepped up—a bold step in view of falling profits. Third, a program of intensive training for salesmen was adopted. Fourth, steps were taken to strengthen customer relations. Within the following year, sales rose 34 per cent, and earnings increased from 1.6 per cent of sales to 5 per cent. Dollarwise, net profits after taxes rose by 400 per cent.

A medium-sized manufacturer

of heating units in the Midwest worked out a different type of program. This company is a producer of specialized heaters, but must compete with larger companies which produce a full, varied line of appliances. Other concerns in the industry have found this type of competition difficult to overcome. The company in question, lacking the capital to market a full line, and aware of its limitations, has overcome them by helping its dealers make arrangements with other manufacturers of specialized equipment. Working jointly, a group of these specialty manufacturers are in a position to offer dealers the full lines demanded.

Adaptation in methods offers as many possibilities for medium-sized wholesalers and retailers as for manufacturers. Several years ago, a New York wholesaler of juvenile furniture found some of his customers stocking small lines of toys. The wholesaler began to supplement his own inventories with these lines, and discovered, to his surprise, that his profits from toy sales were exceeding earnings from juvenile furniture sales. To-day, the bulk of his sales is in toys, and his sales territory has been expanded to cover the entire Eastern Seaboard.

Four years ago, a retailer of electrical appliances opened a store in what had been a potato field on Long Island, completely removed from a centralized shopping center, and three miles away from the nearest competitor. A large parking field, plus a stripped down self-service cash-and-carry sales policy, did the trick. Low operating costs meant low prices, and easy parking and low prices brought customers in droves. The second year, apparel and garden departments were opened. In the third year, he added toys. This year, he opened a grocery super market. Possibly, this particular retailer may eventually go over his head, for inexperience in handling unrelated lines can be catastrophic. Moreover, a major department store chain is about to open nearby. There is no gainsaying, however, that this is already a substantially profitable operation and that growth in capital from earnings is more than compensating for increases in sales.

### 4. Selection and Training of Salesmen.

A shopper walked into a depart-



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order  
to  
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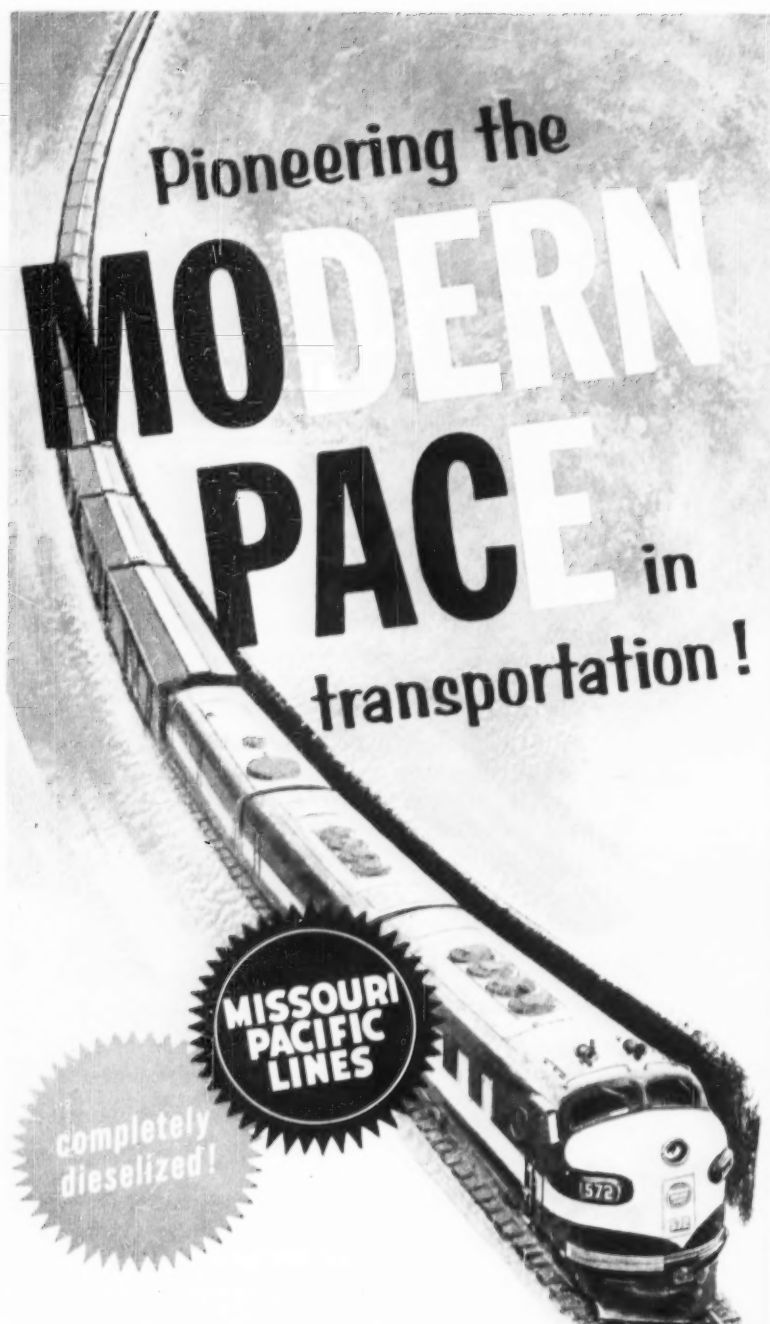
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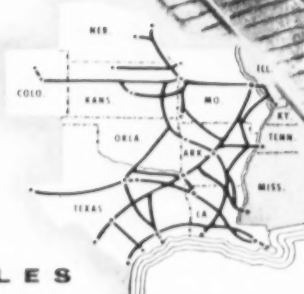




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**ROUTE OF THE EAGLES**



ment store for a motion picture camera. She was in a quandary. There were so many types of equipment to choose from. After waiting for some time to capture the attention of an indifferent salesman, she hesitatingly explained her problem. What kind of a camera should she choose, and how much should she spend. "What kind of pictures do you want to take?" he demanded truculently. "I don't really know," she replied. "Well," was the salesman's comeback, "would you try to buy a dress without knowing the proper size?" In exasperation, the customer walked out.

What is the recipe for sound customer relations? Is it a matter of (1) honest representation of product (2) a visual demonstration of its uses and its value (3) a dependable guarantee of service if the product fails to stand up (4) availability of top management to customers if there are complaints? A simple recipe—really much too simple—but it can pay dividends.

All of which focuses attention on the salesman, since he is the key point of contact with the customer. Two years ago, a panel session was

held in New York in which buyers of office machines and equipment participated. The talk got around to salesmen of this equipment and then sales methods. Here is a summary of some of their very pointed criticisms.

#### What Buyers Said

1. That salesmen had no compunctions about making misleading claims to make a sale. Future customer good will was disregarded. One buyer said heatedly that some salesmen "were plain dishonest."

2. That some salesmen were badly trained—with little or insufficient understanding as to what their equipment could or could not do. But most salesmen could quote at length as to the shortcomings of competitive equipment.

3. There was too much reliance by the salesmen on canned presentations. If the buyer broke in with a question, it was ignored.

4. That salesmen were loath to admit to an "I don't know" and check back with their offices when questions about equipment performance were raised for which they had no ready answer.

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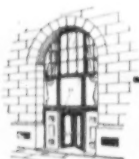
No growing business, in the million dollar annual sales bracket, needs to worry about financing expanding sales.

There's always money available for companies of this kind, through our Working Money Plan. And it's available on favorable terms that entail, no interference with management, no dilution of profits through borrowing and increased carrying charges.

On the contrary, Textile Banking Company offers manufacturers and wholesalers a method of financing that cuts down clerical overhead and increases the scope and earning power of your sales force. Let them sell all they can. You'll get cash for your merchandise as you ship it. And we will assume all credit risks.

If you want to keep growing and keep liquid (this covers inventories, too,) let us show you how we can help you.

Write and invite one of our officers to sit down with you and show you how our Working Money Plan can benefit your business. No obligation.



## Textile Banking Co., Inc.

Providing operational financing for manufacturers and distributors of furniture, apparel, electronics, plastics and textiles.

55 Madison Avenue, New York 10, N. Y.

It costs money to train a salesman competently, but it costs much more not to train. And costliest of all is turnover. According to J. S. Nirenberg, industrial psychologist, the total cost of hiring, training, and then losing a salesman is \$5,400. Yet of fourteen major companies which he surveyed, first year men constituted 12 per cent of the average sales force. He concluded that turnover could be reduced by competent selection, supervision, continuous training, and the offering of proper opportunities and incentives.

There is continuous argument as to whether a good salesman is born or made. Dr. V. W. Ermicke, of the City College of Business (New York) says they are both made and born. He gives the following characteristics.

1. Above average intelligence.
2. High persuasive, literary, and musical ability.
3. Low mechanical, scientific and clerical aptitude. They hate detail.
4. Strong emotional balance, manifested by self-confidence, gregariousness, and sociability.

The big business has certain advantages in the selection of sales

personnel. It can afford the services of full-time, trained personnel and sales management specialists, as well as part-time advisory services of industrial psychologists. Such services are beyond the means of many middle businesses. Yet selection is hardly an insuperable problem. Business executives are generally excellent judges of human nature, and they may avail themselves of tests devised to measure sales aptitude. Management schools and employment agencies can supply copies of these tests and advise as to how the tests are to be administered. Assistance is also available in interpreting the results.

### Communication

Training and supervision? Obviously essential, but they must be backed by effective communication of attitude between salesmen and sales management. Management knows what it expects of the salesman, but does it recognize what the salesman expects of management?

In 1953, Dr. Harry Tosdale, of the Harvard School of Business Administration, surveyed the atti-

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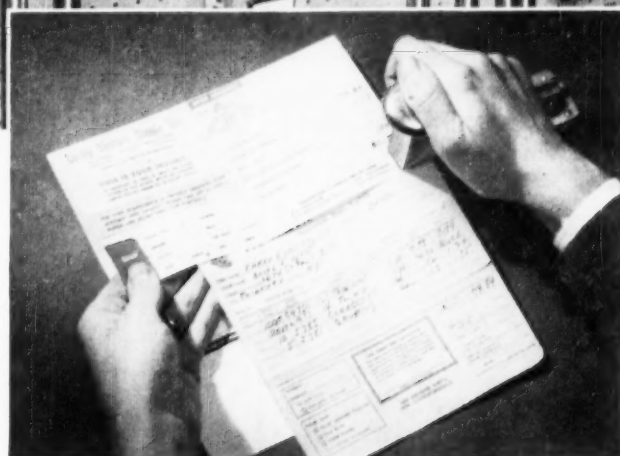
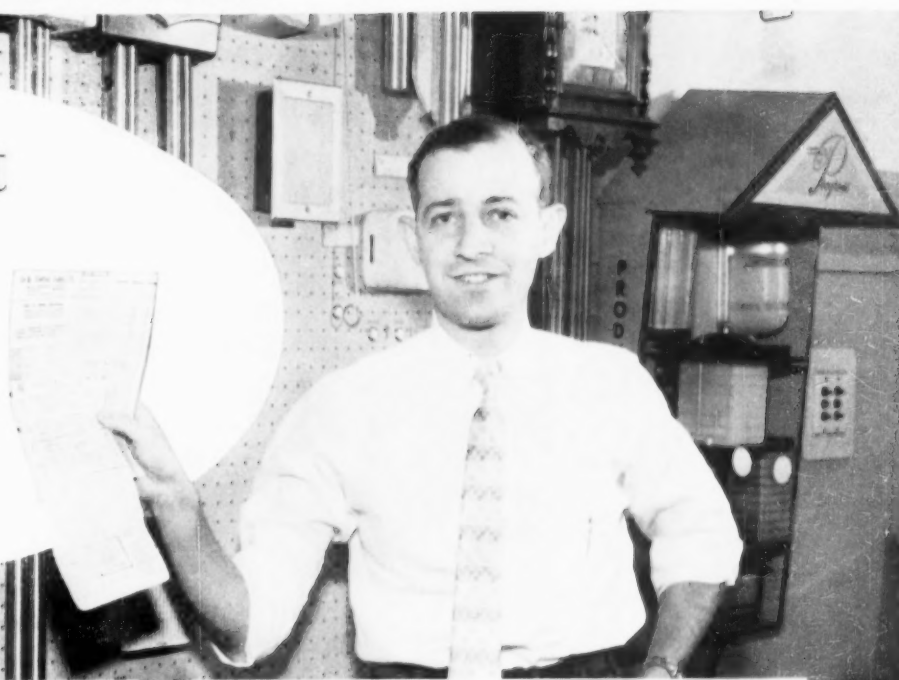
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(1) Customer orders—on catalog order blanks, postcards or letterheads—are stapled to self-mailing printed forms as soon as received. When order is packed, total cost of merchandise and shipping charges is entered and totaled on the form.

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(2) Picture of customer's order and Co-op form (still stapled together) is made instantaneously in a Recordak Microfilmer for  $\frac{1}{8}$ ¢. The film copy is the office record. The originals go out as the invoice.

Co-op Electric—and the many companies which have adopted this system—call it the fastest, easiest, and *lowest cost invoicing system by far*. In addition, hours of filing work are saved... space requirements are cut as much as 99%. Double-check your routines with a Recordak Systems Man soon—no obligation at all!

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tude of several thousand salesmen throughout the country regarding their attitudes toward their jobs. Among other things, he asked them what they considered the job should return to them, other than pay.

These are the things he found they wanted:

1. A high standard of ethics and quality of product for their company.
2. Opportunity for recognition.
3. A fair compensation plan, spelled out in advance.
4. A reasonable compromise between incentive and security, to iron out high and low spots in the year, and to give them something to shoot for at the same time.
5. Adequate information as to product performance and usage.
6. Marketing assistance.
7. Inspiration.

Of the foregoing, all seem self-explanatory with the exception of the matter of "inspiration."

#### Inspiration

I asked a top-notch salesman I know whether or not inspiration meant anything to him. I was surprised at how highly he rated that particular management attribute. His definition of inspiration was as follows: "I receive inspiration when I work for a man who wants me to help improve myself and do my job better. I am inspired when the man I work for understands both me and my job. I am inspired when he tells me things about the product I don't know, when he lays out goals and helps me obtain them, and when he knows more about the job than I do."

The foregoing viewpoint is in decided contrast with the complaint of some middle business men that the salesmen are more interested in showing management how to run its business than in being shown how to handle their sales jobs. They can cite, and at times with just cause, examples of the "star salesman" who is difficult to handle, overly demanding, and generally plaintive about the product, the customers, and the territory. Some middle businesses are even prone to yield their management prerogatives entirely in such circumstances, and allow the sales staff to dictate sales policies, terms, and even pricing.

Salesmen are, however, naturally



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Panama-Beaver's exclusive patented carbon paper box has a built-in copy holder that flips open with a flick of the wrist. Keeps copy material upright and in full view . . . speeds work . . . cuts office costs. Folds up neatly under box lid after use. **COSTS NOTHING EXTRA** when you buy Panama-Beaver Carbon Paper—America's sharpest-writing, cleanest-erasing smudge-free carbon!

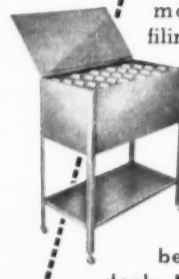
Have the Panama-Beaver representative near you show you the Copy Holder Box without obligation!

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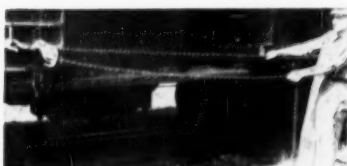
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enthusiastic by nature. They enjoy holding a feeling of respect for the product they handle, their company, and the people they work for. What is more, they want their customers to share the same degree of respect. Actually, this is what they mean by "inspiration." To them, inspiration is a matter of logic and intelligence, not of an effort to move them by emotion.

Efforts to inspire salesmen are probably as old as the job itself, but the inspiration effort is all too often centered around the tactic of holding sales meetings. Some of these affairs have all the atmosphere of a revival meeting. Some go to the other extreme and become a forum for a discourse by management on a set of dry economic statistics.

### Need Ammunition

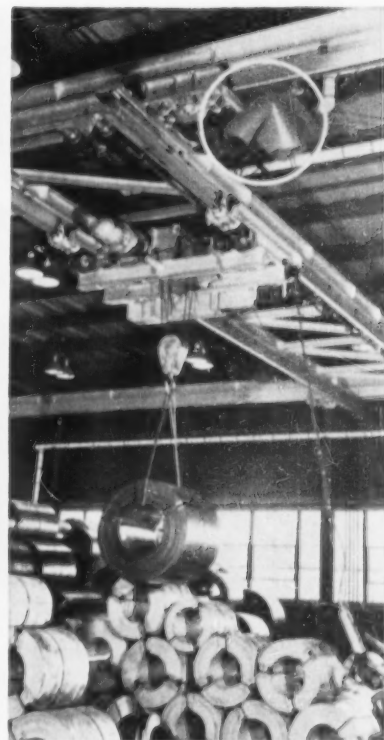
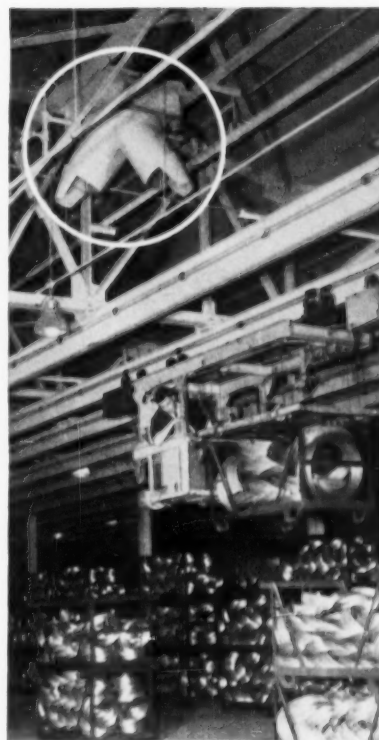
Some sales leaders now question the value of the sales conference. Too many meetings degenerate down to a level of boredom and disinterest. The fact is simply that salesmen are tired of being treated like children. But they believe that the meeting is valuable when it is concentrated around information pertaining to everyday sales problems and in furnishing realistic facts about product and product performance. Being mature and practical people, salesmen want to be recognized as such. What they want particularly is ammunition which will make them more effective on the firing line.

We are now in a highly competitive era which calls for tops in management skills and performance. It is easy to pinpoint the problems and to suggest the approaches—much easier than to provide a pat formula which would solve each problem.

There aren't any pat formulas. The answer to each problem is subject to the initiative and the ingenuity of each manager. Yet there is zest and a reward when the answers are found.

Sometimes, of course, the highways and byways can be narrow and momentarily uncomfortable. Which reminds one of that brief but sound philosophy propounded by the Oriental narrator in the play "The Teahouse of the August Moon."

"Pain," he said, "makes men think. Thinking makes men wise. Wisdom makes life endurable."



## Here's Proof of the Complete Even Distribution of Heat by Wing Revolving Heaters

ONE of the problems of storing large rolls of steel strip is variation in storage room temperature that results in "sweating" and consequent corrosion. In one large eastern steel mill where such sweating was going on, resulting in costly corrosion, the problem was solved by replacing ordinary heaters used for heating the building with Wing Revolving Unit Heaters.

The constant slowly moving streams of heated air circulate around and through the stacked coils of steel strip, keeping them always at a uniform temperature. Since installing the Wing Revolving Heaters, this

mill has never lost a coil through corrosion!

Your problem may not be corrosion, but the same even gentle movement of heated air will prove equally effective for your workers in increased comfort. (Winter and summer, for your workers will be equally pleased with the cooling effect of these "heaters" on a hot day—with the steam off and fans and revolving discharge outlets working.) For medium and low ceiling heights as well as for high ceilings. This is modern industrial heating. Investigate by writing for a copy of Bulletin HR-6A.

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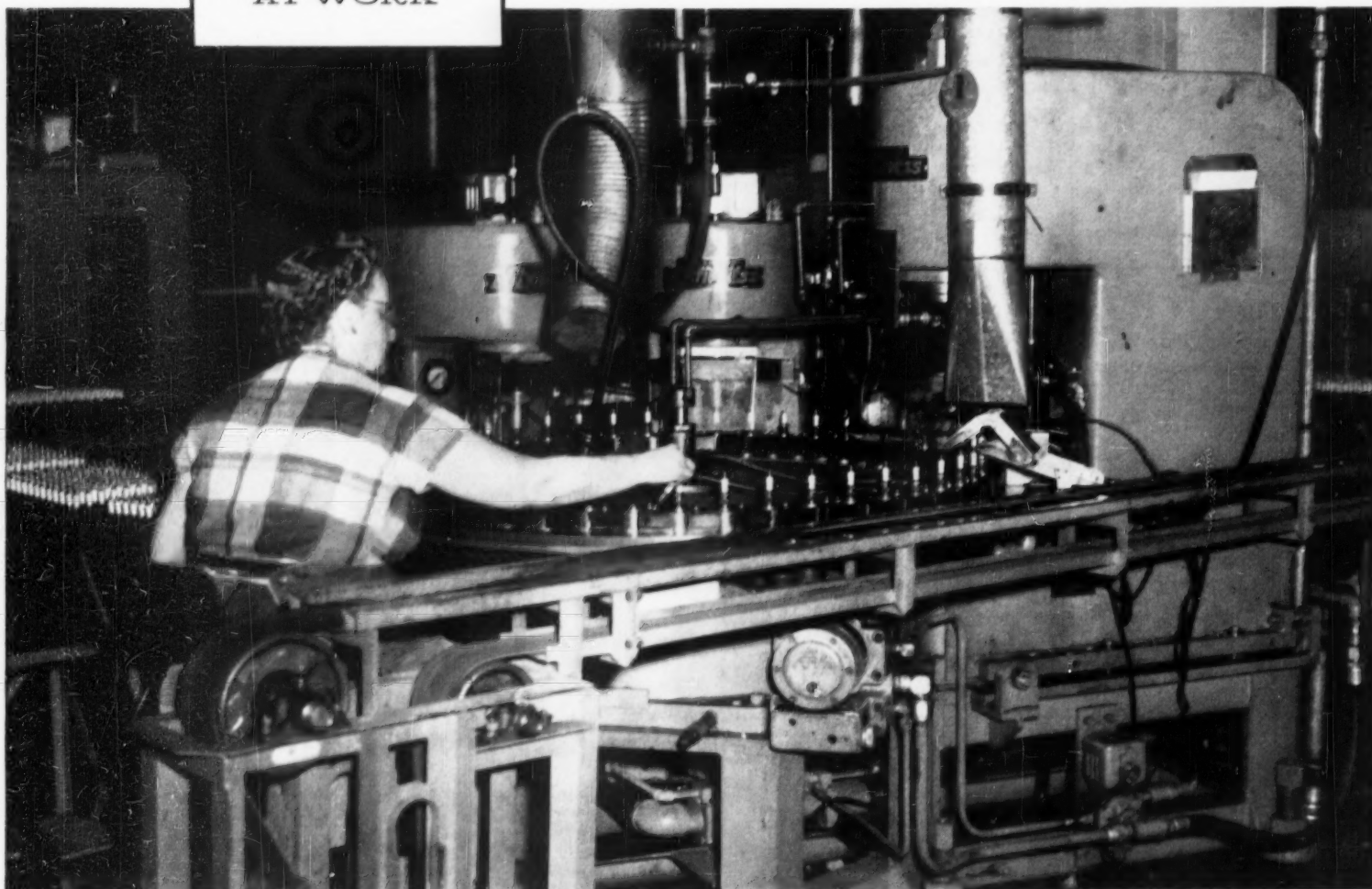
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## HYDRAULICS AT WORK

**FOR HIGH-SPEED ASSEMBLY.** Multipress now performs three operations in one, cuts idle time in changeovers, for Electric Auto-Lite.



# Plugging a Bottleneck

**How Electric Auto-Lite eliminates product changeover idle time with a switch to Denison Multipress®**

**C**AN STANDARD PRESSES compete with highly specialized equipment on short runs involving frequent product changes? Electric Auto-Lite engineers answer, "emphatically, yes."

In their operation, seven standard Denison hydraulic Multipresses are used to assemble precision parts in hundreds of different sparkplug design modifications. Prior to

adopting Multipress, nine special purpose machines were thought necessary to turn out the work.

Important in this case was the virtual elimination of idle press time—a factor that cuts deeply into profits. The Multipress installation has also meant a reduction in investment, operating and maintenance costs, plus an improvement in production

rate and product uniformity. What's more, the versatile Multipress stands ready to be adapted for future automation at any time.

This is only one of hundreds of examples where Denison hydraulic methods, when applied to production problems, save money, improve quality, step up performance. Let a Denison specialist show you how. Write to Denison Engineering Division, American Brake Shoe Co., 1160 Dublin Road, Columbus 16, Ohio.

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**EMPLOYER  
RELATIONS... ALFRED G. LARKE**

## THE HANDICAPPED: EASY TO TRAIN

*When jobs they were hired for ran out, this aircraft company found its physically handicapped learned new tasks with ease*

**B**EFORE and during the war, Ryan Aeronautical Company, San Diego, Calif., hired many workers with physical handicaps—totally deaf, mute, with only one leg or one arm or one eye, with a leg or a hand immobilized by polio, or disadvantaged in other ways.

Ryan completely staffed its noisy



Karl Perry, arthritis-ridden, began as welder at Ryan in 1942.

planishing department with deaf mutes because they alone could work unperturbed by the machine-gun rat-a-tat-tat of the machinery there. Recently, however, the company has been turning more and more to the manufacture of jet engines, and production of the manifolds in the planishing department declined. What was to happen to the deaf-mute planishers?

Because they had established their reputations as reliable craftsmen, other departments gladly absorbed them and found they learned new skills with single-minded concentration, turning easily from planishing to welding, aircraft assembly, saw, and router operations.

Ryan reaffirms previous reports that the physically handicapped employees have low absenteeism and turnover rates, high efficiency, gentility, and devotion to duty. But it adds a new statistic: Although approximately 100 handicapped on the company's payroll are less than 2 per cent of all employees, more than 50 percent of the handicapped who are interviewed are hired.

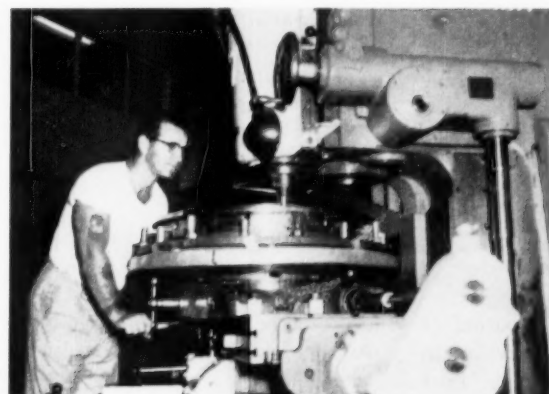
William Rossi, employment inter-

viewer, attributes the high rate of hires to the fact that very few of the handicapped men and women are transients, unlike most job-seekers who come to the San Diego plant.

"We employ deaf and other so-called physically handicapped men and women in 41 of our 133 departments," says Leslie E. Gehres, manager of employee services. "They cover a wide range of jobs, including welder, parts repairman, machine operator, secretary, contract analyst, master mechanic, and engineer. They are hired for their skill and character, and the only extra consideration given a handicap is on the question of safety. Naturally, we can't hire a man for a job in which his handicap would add an element of danger."

Maurice Clancy, supervisor of safety and welfare, reports that although the plant safety record is good enough to have won it the National Safety Council's highest award, the record of the handicapped employees is even better—they have never had a lost-time accident.

Ryan's experience with the capa-



Although he lost a leg in a wartime accident, Navy veteran Joseph Groton operates milling machine with skill.



Robert Forbes is one of five who learned use of black diamond grinder Ryan gave to Sheltered Workshop.



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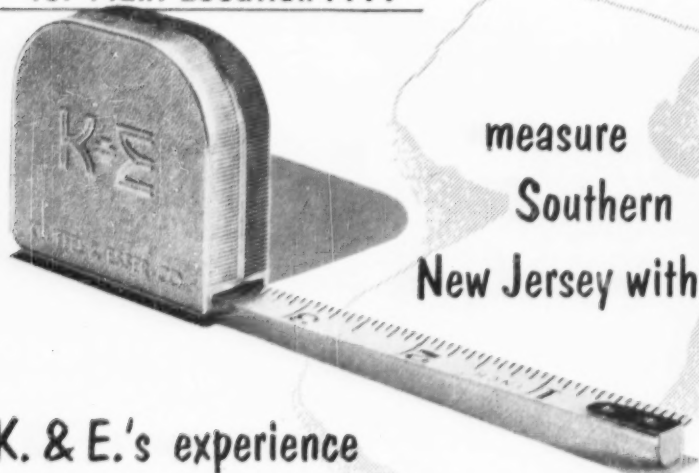
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G. Raymond Wood Director



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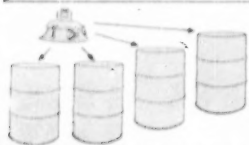
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### WEST BEND EQUIPMENT CORPORATION

MATERIALS HANDLING ENGINEERS

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Deaf, Mabel Lloyd has been a Ryan heliarc welder for seven years. Many deaf employees were once employed in plant's noisy planishing shop.

bility of its own handicapped workers led it to subcontract outside production jobs to the Sheltered Workshop of San Diego, a non-profit corporation set up to employ the physically handicapped. Ryan and other aircraft companies participated in the Workshop from its start in 1953.

Recently Lloyd Barrett, a Ryan methods analyst, after a work simplification study, recommended that the aircraft company subcontract its drill grinding, then sent 300 miles to Los Angeles and back, to the Workshop. At his suggestion, the company presented the Workshop with a black diamond drill grinder, which can be operated from a wheel chair. Five handicapped employees have mastered its use and now turn out precisely-ground tools for Ryan and several other San Diego aircraft plants.

Ryan requires the Workshop to maintain competitive standards. "In fairness to its customers," says Sam Kroschel, Ryan contract terminations administrator and Workshop vice president, "Ryan must ask for peak performance from its employees and from the Workshop as a subcontractor. And that's the way they want it, too."

"In my opinion, Ryan's policy of 'non-discrimination' in its relationship with handicapped workers is one reason for the program's success. It's a business association of mutual benefit and satisfaction to all concerned, and that's the kind that lasts."

Make a Memo: October 7 to 13

this year is National Employ the Handicapped Week.

### Radioactivity report: job hopes for the over-40's

When six committees of the National Academy of Sciences published in June their initial reports on the hazards and problems caused by the immense increase in radiation released since development of atomic energy, did their findings suggest a new field in which those over 40 may become specialists?

The committee on pathology called attention to the fact that radiation can shorten life, but found no evidence, as yet at least, that doses up to 100 roentgens, spread over years, can shorten human life.

On the other hand, the committee on genetics was graver in its warning on the hazards to the future of the human race in exposure to much lesser amounts of radiation that may reach the reproductive organs. The cumulative effect on future generations, it said, is the same whether a few people are exposed to large amounts of radiation, or many people to lesser amounts. The number of mutations would be the same.

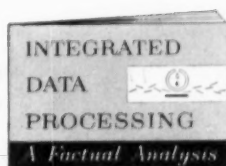
As a result, it recommended maximum exposures for people up to age 30 and 40.

From middle age on, few people raise children, and the genetic effects of radiation received in later life would be virtually nil. Up to the point where increased exposure would result in shortening their lives, the over-40's might be preferred employees.





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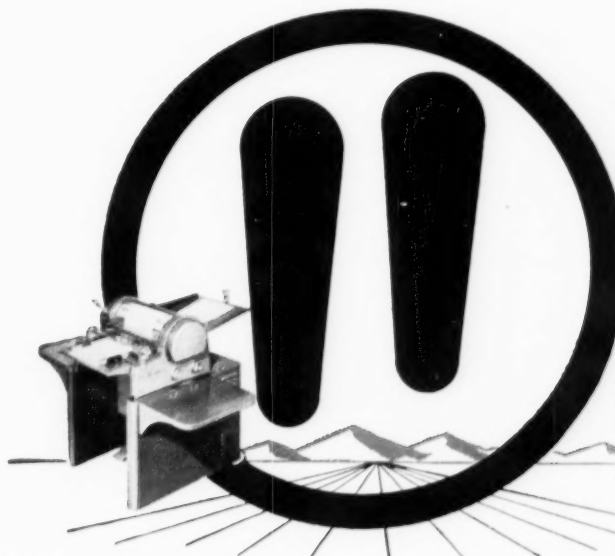
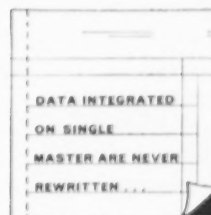
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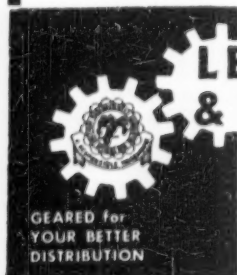
**Uninterrupted service.** "Adequate stocks stored close to consumption points has been our best assurance of uninterrupted, quick and dependable service to our outlets for perfect delivery of fresh cigarettes."

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## VARIABLE ANNUITIES

Continued from page 45

any United States income tax, dividends and capital gains remain undistributed, and not even capital gains tax on increased value is paid if the investor retains the shares until death.

These "Canadian domiciled" mutual funds, given clearance by the SEC in April 1954, in just a year and a half of operation have attained aggregate assets of over \$200 million.

There isn't any tax loophole here. Far from it. But even if there were, experience proves that Congress and the Treasury have been alert to plug up loopholes.

The participation of federal agencies has not been necessary to see that insurance companies backed up their present policies and annuities contracts by investing money on a sound basis. Far-reaching state regulation has done its job admirably. The right to make common stock investments is not the special prerogative of any limited group of enterprises.

In recent years the New York Stock Exchange and Wall Street securities firms have spent hundreds of thousands of dollars telling us in newspaper and magazine ads that retirement plans should make extensive use of common stock investments. Today they are in an uproar because we believed them and acted on that belief.

### Purchasing Power

Last October, in a speech in Chicago before a life insurance group, Mr. Funston discussed the importance of pension plans and expressly referred to "the necessity of furnishing a man who retires with a certain purchasing power, regardless of how many dollars it takes to provide it."

In this same speech he emphasized, as he has done on many occasions, the huge demand there will be for new equity financing in the years ahead to make possible the new capital expenditures needed for the expanding economy. He estimated that the country's need for new equity money in the next ten years would be \$80 billion and that institutional investors would be able to supply only about 38 per cent of this amount. He referred to the importance of providing people

"with the necessary financial incentives so that they will stake some of their funds on our economic future."

A year ago Mr. Funston wrote to our company as follows about variable annuities:

"More important than the question of who is regulated least or taxed most, is the question of where the public interest will be served best."

### No Solid Opposition

By no means all of those in the securities business are opposed to variable annuities. At our June 22 legislative hearing at Trenton several members of the New York Stock Exchange were on hand to testify in favor of the proposal. In the authoritative Standard & Poor's publication, *The Outlook*, for July 2, 1956 there was an article entitled "Variable Annuity Concept Sound" which contained these pertinent statements:

"If the current conflict about variable annuities (based upon stocks rather than bonds) has no other result, it will have been worthwhile in acquainting a host of newspaper readers with the need for protection in some form other than fixed return. . .

"The Wall Street fraternity fears that, if insurance companies should be allowed to sell variable annuities, one result might be the substitution of those instruments for direct common stock investment. The contrary point of view is that (1) selling efforts by the life insurance agents would acquaint millions of people with the advantages of investment in common stocks and (2) since the costs of high pressure annuity selling are necessarily high, many converts to common stock investment would sooner or later swing over from insurance companies to direct investment through brokerage houses."

There is a large, wholly impartial group that knows a great deal about variable annuities already—and also knows a great deal about the life insurance business and its existing products and sales methods. These are the hundreds of college and university teachers of insurance. In response to a questionnaire sent to this group 84 per cent

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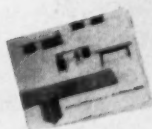


Steelcase Convertibles make sense!

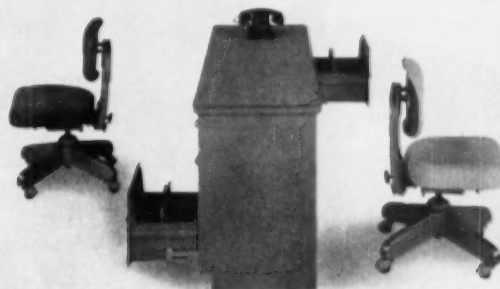
How? By combining smart, space-saving design with sturdy, durable construction. And? By using otherwise wasted floor space along walls and in corners and converting it into profitable work areas.

Convertibles are engineered sensibly, too! Extra units can be added or substituted . . . existing units rearranged or removed to give each individual just as much top and storage space as he desires or requires.

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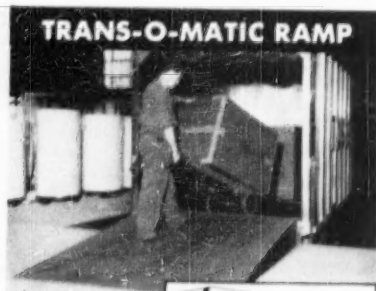
## THREE WAYS TO SPEED TRUCK LOADING

*"Lift-Portation" expedites  
materials handling . . . cuts costs*

by Frank Breckenridge Vice-President in charge of  
Engineering and Manufacturing

NO MATTER HOW snugly a truck is backed up to your loading dock, there is still a gap and a height variation between the truck bed and the dock. The operation of passing goods across this gap is costly, time-consuming, and can be dangerous.

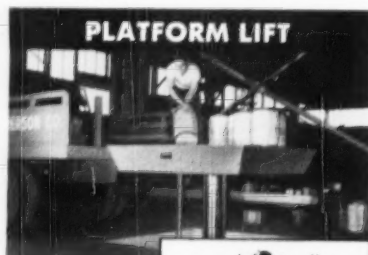
You can bridge this gap by using one of three modern mechanical loading devices manufactured by Globe Hoist Company. Each of these devices is easily installed . . . will pay for itself quickly by speeding the movement of goods in and out of your business establishment.



**TRANS-O-MATIC RAMP**

All too often the "standard" height above road level of shipping docks is either too high or too low for most truck bodies. Hand trucks and fork trucks operate with great difficulty over make-shift ramps. Because of slow loading and unloading, trucks wait for platform space . . . costly delays result for shipper and receiver.

Installation of a Globe Trans-O-Matic Ramp provides smooth travel regardless of differences between truck bed and platform. Fast pushbutton control brings dock level to truck level. The Ramp's steel lip moves 15" up or down . . . floats with either rising or lowering action of truck or trailer floor. And you can handle two or three times more freight on your present dock area. Ramp sustains rollover weight of 20,000 lbs., storage loads up to 400 lbs. per sq. ft.



**PLATFORM LIFT**

Designed to eliminate ramps, gangplanks, and manual lifting, Globe Platform Lifts permit fork trucks or hand trucks to be run on the platform at ground level and, after being raised by smooth hydraulic power, to run into the truck. Loads are moved on the level . . . accidents and breakage are minimized.

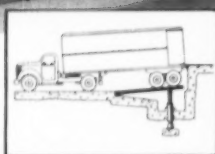
Globe Platform Lifts are low-cost and designed to fit most needs. Lifting capacities range from 5,000 to 80,000 lbs. Platform raises to 58", can be controlled either by air-oil unit or Globe Oil Pump.



**TRUCK LEVELER**

Where it is more practical to position the truck or trailer, Globe Truck Levelers are used to raise or lower bodies so that beds are flush with platform.

Truck Levelers position the rear of a vehicle by raising or lowering the rear wheels. The unit consists of a sturdy hinged ramp powered by two hydraulic rams. A Globe Electric Oil Pump supplies the power. Size is 10 x 12 feet . . . lifting capacity is 40,000 lbs.



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Please send us complete information on Globe Trans-O-Matic  
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of the 319 college teachers of insurance who replied answered "Yes" to the question "Do you think variable annuity contracts should be offered to the public by life insurance companies?"

Out at the University of Indiana another type of survey has just recently been completed. It dealt with how many life insurance companies expect to be issuing variable annuities within the next 18 months. The survey states that 96 life insurance companies expect to be issuing variable annuity contracts within that period.

In Wisconsin a Governor's Commission on state retirement plans is actively at work on a variable annuity plan for state employees. The Airline Pilots Association has shown substantial interest in the variable annuity. Since health standards for pilots are extremely high and a pilot may retire at a somewhat lower age than the rest of us, quite a long retirement may result. It is the belief of the pilots association that a conventional retirement plan providing a fixed dollar income over a fifteen- or twenty-year period or longer could create serious financial problems that a variable annuity plan might help prevent.

### A Place for Stocks

Other prudent long-term investors, including those with trustee responsibilities, have increasingly recognized that common stocks have a place in their over-all investment programs. In last year's report of the Fulbright Committee to investigate the stock market it was brought out that bank administered personal trusts, on December 31, 1954 held \$32.7 billion of common stocks. At current market levels this figure would be even higher.

In addition the Fulbright Report showed that \$6.3 billion of common stocks were held by religious, educational, and charitable funds; \$5.2 billion by fire and casualty insurance companies; \$8.7 billion by investment companies; \$3 billion by self-insured pension funds; and only \$1.1 billion by life insurance companies.

The variable annuity will make it practicable for life insurance companies to join this trend toward increased use of common stocks. In a sense we are only asking for permission to catch up with the parade.



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## A CULTURAL EDUCATION

Continued from page 50

an introduction to the wonders to be studied more deeply in the years to come, just to keep the memory bright and the flame of culture glowing.

In this age of skepticism and devotion to the inventions of scientists, it may be asked: "Why visit cathedrals?" The answer is simple enough in itself, but not easily understood by the masses who pin their faith in education to what they receive by radio and television. It is surprising to find men of business who have been to our institutions of learning quite ignorant of the fact that the cathedrals of the twelfth, thirteenth, and fourteenth centuries were the colleges and universities from which the arts and sciences flowered to give a fragrance to delight the soul of a scholar.

Music, poetry, history, mathematics, science, painting, sculpture, stained glass, and architecture, to mention only a few of the cultural arts, all came from the cathedral to make life beautiful. Bede, Aldhelm, the Chroniclers, Roger Bacon, John of Salisbury (whose *Metalogicon* is now done in English by Daniel D. McGarry of the University of California)—these were the men who gave to knowledge the treasures that time does not age, nor scholarship ignore. Yes, they are of the past, but of that past which endures and serves to give an understanding of the present. Indeed, for present use and value the *Metalogicon* might have been written yesterday. Such is an example of a timeless work written in 1159.

### The Culture Remains

Here is to be found the beginning of a culture which has survived all the changes wrought by politicians and scientists. Thrones, frontiers, systems of rule alter century after century, and now generation after generation, but, notwithstanding the havoc of war and revolution, the work of the scholar, the man of culture remains unblemished and for solace yields a spiritual unction which is balm for our material and social distress.

A man nearing the time of retirement from business, who has cultivated no avocation, is comparable to an engine without gas or steam.

Several of these pathetic people have asked what they could do to save themselves from boredom. One well-known, rich manufacturer had to retire before he reached 60. He was to lead a quiet life. With care, he might live on for another 20 years. Idleness to him was worse than financial bankruptcy. What was he to do? In his case, it was a problem not easily solved. But he was told the story of an avocation enjoyed by William Lever, the founder of Port Sunlight.

After Lever was housed in the splendid mansion at Thornton Hough, he took pleasure in furnishing it, but when that was done, he desired some other study that would interest him every day. He had always been fond of porcelains, and reading of a sale of Chinese specimens, he asked Duveen, the art dealer, to recommend an expert who would tell him about the history of the pieces to be auctioned. Not content with the information given by the expert, he asked for books containing the opinions of connoisseurs on Chinese porcelain. Before the sale, he knew about the period, dynasties, provenance and worth of the specimens. That was how the famous Lever Collection began.

Once when Lord Sheffield was his guest and was inspecting these treasures, he said, "I wonder how you found time in your busy life to indulge in such a fancy." Lever replied, "I was obliged to. I had to have something to refresh my mind after business."

A story is told of King George V, occupied with his stamp album, who, turning to the Queen, said, "Mary, I wasn't good about geography at school, but when I went to sea I learned about the ports. Do you know, I never thought it was so interesting until I began to collect stamps and I learned then that there was much more to a country than a dock and a coaling station."

The avocations of famous men make up a section of literature which is not only of deep interest but which contains many amusing stories of how they were made. The old phrase one often heard during the nineteenth century was that money bags had taken the place of

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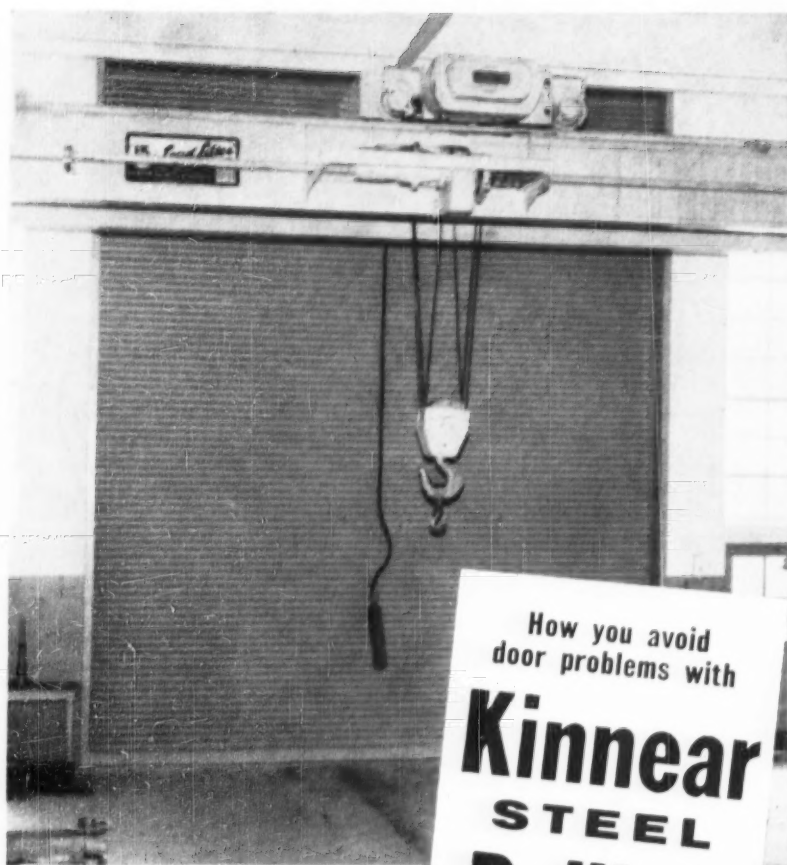
### MODERN CLASSIC CARBON PAPER

by  
*Columbia*

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There may be some risk in showing how Kinnear Rolling Doors solve so many special problems, in doorways like the one above.

It might give the impression Kinnear Doors aren't best for ordinary needs — which they are.

But in the picture above, note how the traveling crane moves right up to the face of the door. Notice the windows close to the door on either side. Also the steel supports and piping above the doorway. And the way floor and wall space is used clear up to the door jambs.

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the connoisseur in art, and frequently it was leveled unjustly at men of wealth. In our country since the turn of the century the value of famous paintings and sculptures has risen to such heights that only the wealthiest men can afford to indulge a passion for making collections.

When we think of the glories to be found in the National Art Gallery in Washington, where the collections of Andrew Mellon, Joseph Widener, and Samuel Kress are to be seen, we must thank fortune that such men devoted their time and means to enriching our lives with specimens of the most famous schools of European art. Now these were the avocations of men who knew what they were purchasing; they were sure they were buying originals, for a copy is seldom foisted upon the collector. Moreover, there are private collections open to the public, which are worthy of all praise. Such a one is the Frick Collection in New York. Another is the Taft gallery of Cincinnati. Many others could be mentioned, but there is not space in a short article to deal with all.

### More Than Riches

However, it takes something more than riches to gather a collection of distinguished works of art about which there is no question of authenticity. Any rich man can purchase a picture that is for sale, but does he know the school, the artist, and the provenance of the work? It is not sufficient to engage an expert or a well-known dealer to supply the information lacked by the purchaser. Such a procedure may lead to difficulties and lawsuits.

The proud possessor of some 30 or 40 paintings was visited by a well-known European expert, who found that his host had never heard the name of Andrea del Sarto and was quite ignorant of the influence of Masaccio upon his period. All the more credit is due to those men who have made a study of the works they desire to purchase. These avocations of rich men not only make life worth living for them, but give them the pleasure of bequeathing to others cultural riches which should inspire the generations to come with a love of the beautiful.

Culture, however, covers a far

wider field than that which is bound in by one of the arts. There is really no known limit to the area of cultural refinement. Without a knowledge of the past and, as Matthew Arnold put it, "to know the best that has been said and thought in the world," a man might some time find that the sphere in which he has indulged his fancy is a narrow one. Therefore, books should be the foundation of refinement. To know the difference between the archaic Isis and the sculpture of the time of Phidias, as one may view them in the Museum of the Acropolis, calls for a knowledge of both Egyptian and Greek religion and art. To know why Professor Firth discovered at Saqqara a Doric colonnade near the foot of the Zoser Pyramid demands a familiarity with the history of the past that is not easily acquired, but many students have mastered it and have been none the worse for the labor.

### Not Too Much

Is it too much for a busy man of industry and finance to undertake? Not at all, if he, like William Lever, desires spiritual refreshment after the industrial turmoil of the day. George Grote was a banker, but he found time to write his *History of Greece*. Walter Leaf was a banker, but he assisted largely in making a prose translation of the *Iliad*. Sir John Lubbock gave us the hundred best books, and he too was a busy banker, concerned with great industrial enterprises in the City of London and elsewhere, a Member of Parliament, and a working director of many artistic and social organizations.

Surely it is all a matter of when one begins. The flair for knowledge must burn brightly in the early years, if it is to keep aflame when the business days are over. Avocations there are in plenty for those who do not know what to do with themselves after they are put on the shelf. Many have begun late in the sixties to learn about things they overlooked when they were at school, and have found relief from boredom and depressing hours.

One source of profitable adventure is the second-hand bookstall. Many people have begun in this way to collect first editions, state documents, tracts, and other literary curiosities, as old Isaac Disraeli



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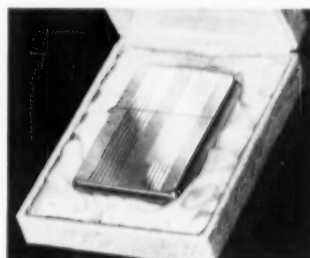
*Job management:* key points in supervision, steps in organizing, planning and controlling.  
*Main Management:* the new employee, building workers through training, making an analysis of duties performed, problems of people at work, evaluating, supervisory methods. *Appendix:* sample job analysis, sample training plan.

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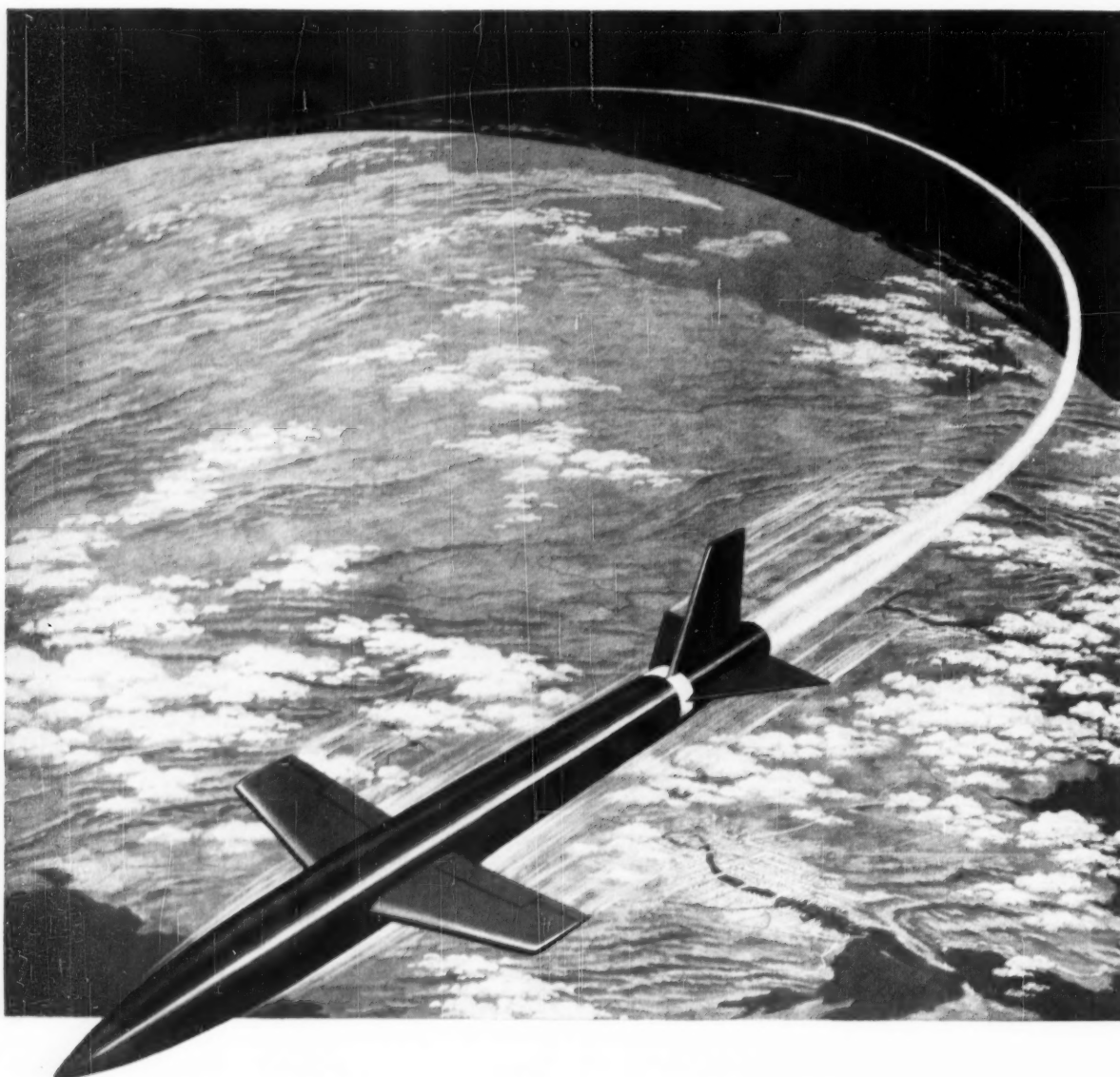
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Marketing notes and comments

... THOMAS KENNY

# MORE ABOUT KEY INDUSTRIAL MARKETS

*Government aids for small business; how to figure prices; circus acts sell appliances; and more.*

**IF YOU ARE** now using or are planning to use the Guide to 90 Key Industrial Markets (August, pages 54 and 55), you'll want to substitute Census Bureau data for the DR&MI estimates. The Government data was received too late for inclusion in the tables. The data are for each of the five columns on page 55, August, for Columbus, Ga.; Birmingham; Mobile; Los Angeles; and San Francisco. The five columns are:

1. Number of plants.
2. Number of employees (thousands).
3. Value added by manufacture (millions of dollars).
4. Per cent of national total value added.

5. Per cent gain in value added, 1954 compared to 1947.

So, for Columbus, the Census Bureau data are:

1. 176
2. 20.7
3. 89.5
4. 0.08
5. -9.4

For Birmingham:

1. 617
2. 58.1
3. 485.0
4. 0.42
5. 72.1

For Mobile:

1. 226
2. 15.4
3. 123.6
4. 0.11
5. 35.3

For Los Angeles:

1. 14,492
2. 636.0
3. 5,117.5
4. 4.41
5. 149.2

For San Francisco:

1. 4,694
2. 201.6
3. 1,935.9
4. 1.66
5. 66.1

The data in columns 2, 3, 4, and 5 for Knoxville will have to remain as partial estimates. Figures for Blount County, Tenn., which accounts for a minor part of this industrial market, will not be made available by the Census Bureau. Sometimes data are held back by the Census Bureau in order to avoid disclosing important information about individual companies. However, later non-Government information points to these refined estimates for Knoxville:

3. 147.0
5. 33.6
4. 0.13

For Tulsa, the estimated figure in column five should be replaced by the official figure of 125.3. For Atlanta, substitute 125.6 for 100.0, and for Savannah substitute 104.0 for 60.6.

By an error in transposition, the value added total for the Providence, Fall River, New Bedford market area appeared as 1036.0 rather than as the correct figure of 1306.0. Column five for this area should be 40.2. The New England value added total should be 8251.5 in column three and 32.7 in column five.

Here are the South Atlantic States Key Market Totals after the estimates are changed to official Census Bureau data:

1. 9516
2. 861.5
3. 6011.6
4. 5.20
5. 54.1

For the South Central States, the totals should now be:

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COST PRICE (That this side)	90 ea. 10 80 doz. 129 60 gr.	COST PRICE (That other side)
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48 3.76 69.12	100%	35 1.50 13.50
50 4.00 72.00	100%	38 1.60 14.40
55 4.40 79.20	100%	40 1.76 16.52
60 4.80 86.40	100%	45 2.00 18.00
65 5.20 93.60	100%	50 2.25 20.25
70 5.60 100.80	100%	55 2.50 22.50
75 6.00 108.00	100%	60 2.75 24.75
80 6.40 115.20	100%	65 3.00 27.00
85 6.80 122.40	100%	70 3.25 29.25
90 7.20 129.60	100%	75 3.50 31.50
95 7.60 136.80	100%	80 3.75 33.75
100 8.00 144.00	100%	85 4.00 36.00

% OF SELLING PRICE — UNIT SELLING PRICE

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How to use the Discount Dialer

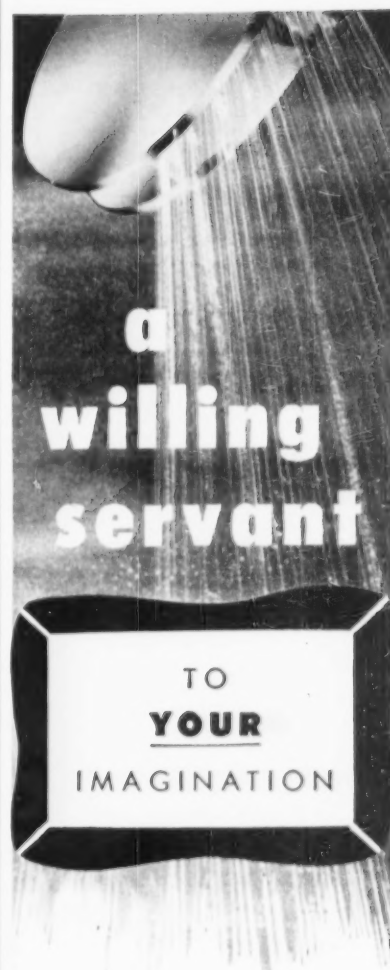
Find the side of the Discount Dialer on which your cost price appears. (The list above, remembering that for \$1.20, \$12.00, etc., you use the cost price \$1.20.)

2. Your cost price. (Shown at top of opening.)

3. Your selling price is the number on the wheel that is opposite your % of selling price or % of cost price, whichever you use. (The selling price is \$1.20 for \$1.20 when figured at 100% of selling price. Move the decimal point of the selling price one place to the right for \$1.20, two places to the right for \$12.00, etc., or one place to the left for \$0.12.)

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CITY..... ZONE.....

STATE.....

1. 8784	4. 4.54
2. 638.1	5. 84.0
3. 5269.8	

For the Far West, the totals should now be:

1. 24742	4. 7.56
2. 1060.3	5. 106.3
3. 8778.7	

Finally, the new revised total for the 90 Key Market Areas:

1. 187,498	4. 78.24
2. 11743.0	5. 58.4
3. 90774.6	

## Free marketing advice

Have you been receiving the latest copies of the *Management Aids for Small Manufacturers* and *Small Marketers Aids*, published by the U.S. Small Business Administration? If not, here are some titles of the pamphlets you have missed. Each is from four to eight pages in length and contains brief, pointed guidance on important subjects.


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## Fly to see the roof

Helicopters are being used increasingly by sales promotion people (see July, page 79). The first such use in the Pittsburgh area was by Owens-Corning Fiberglas Corporation which airlifted architects from downtown Pittsburgh to a plant 45 miles away. The object: to demonstrate the qualities of a "glass roof" being installed at the Eljer Plumbing Co., Ford City, Pa.



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## Piggyback autos

We've heard a lot about the piggyback movement of trucks on railroad cars in recent years. Now from Germany comes a variation on the theme which is catching on like sausage at a picnic. Vacationers in Germany this past Summer have been taking their cars with them on long train trips and then reclaiming them like baggage immediately on leaving the train. The German Federal Railways has been running special piggyback trains between Hamburg and Chiasso on the Swiss-Italian border, while a similar service has been provided by the Belgian State Railways between Ostend and Munich.

## Up in the Sewer

Some people don't care what they spend on sewer pipe. Armco Drainage & Metal Products, Inc., Middletown, Ohio, will soon tour the United States and Canada with a specially-constructed, air conditioned, stainless steel section of sewer pipe mounted on a trailer.

Inside the pipe, interested government officials and engineers can see displays of Armco municipal and highway products, sound movies, and slide films.

The \$50,000 venture was built to draw attention to the new \$33 billion Federal highway program and, of course, Armco's ability to contribute the working materials.



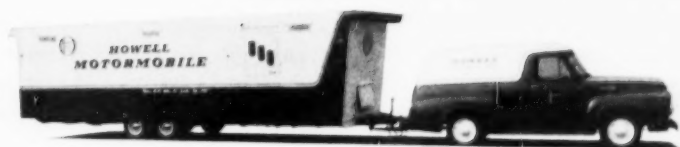
## Old circuses never die . . .

They just fold away their tents and appear in a different form. One unusual form is that as a recent sales stimulant. In the Chicago area, Norge dealers are attracting thousands of prospects to their stores by running circus acts in adjacent parking lots. The result? Dealers report that the interest in appliances is in tents.



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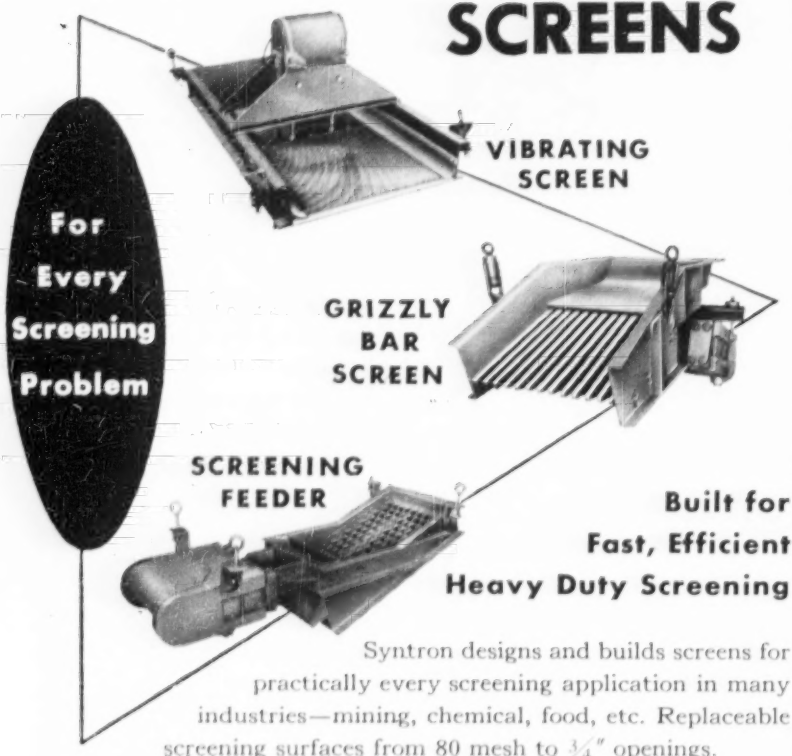
If you are one of the approximately 15,000 individuals that will go through the Motormobile this year, during its visits to plants throughout the East and Middle West, you'll see the new Series 100 and many other types of motors in operation. However, in lieu of seeing these "Ideas in Action", if you'd like information on any type of industrial motor, 1 through 300 hp, please write or call Howell Electric Motors Company, Howell, Michigan. You'll receive a prompt reply.

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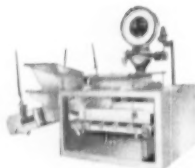
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## EXPORT LIKE AN EXPERT

Continued from page 49

But, so far, I haven't mentioned the most important one.

If, at a given moment, you have the free choice of a number of things to do, which one will you pick? The one that gives the best return, in dollars and cents, for your efforts? You probably will—sometimes. But if you check your actions and motives thoroughly you may be surprised to find how often you pick the thing that appears easiest to do, less likely than the others to cause complications, embarrassment, or snags.

The paramount factor in the locker-room competition therefore is one that you can govern at will: *Make it easy* for Sr. Ferreira Melo to work with your products. And 'make it easy' in most cases means: *keep him posted*. Give him information, and plenty of it.

### Never Too Much

You have, of course, always done that. But remember: when you are talking about information for general agents overseas the terms 'too much' or 'superfluous' are inapplicable. It can safely be assumed that the supplier who provides the most extensive information about his product, advice on sales policy and techniques, and sales promotion material will be the one who wins the working hours.

And, above all, answer his letters at once, no matter how long he lets you wait for yours, and no matter how trivial, irrelevant, or silly his queries may appear.

He may have asked you about the composition of the glass used in your percolators. What does he want to know that for? It surely suffices that he has been told that the material can stand the heat without cracking, and that it is fairly resilient to blows.

By all means, it's no secret. You are going to satisfy his curiosity. You will dig out the formula and have it sent to him. But that can wait, you have more important matters to attend to right now. So Sr. Ferreira Melo's letter comes to rest in your 'Not Urgent' tray.

Perhaps he didn't tell you why he wanted to know it. His reason for asking may have been more important than could reasonably be imagined. It's quite possible that

he didn't know exactly how to put it in English, which is very often the reason for the taciturnity of your agents.

But even if he only wanted to satisfy the curiosity of an Oporto hardware dealer this lack of knowledge will be a small block in the path of your products.

Your percolator will appear a little less easy and attractive to Sr. Ferreira Melo while he is waiting for your answer. There is one possible question from his customers that he can't answer. And that little difference may be enough to put the whiskey, or perhaps the Swedish tools, on top of you in his mind. You are stuck in the locker-room.

Therefore, answer all letters at once. And don't think that you do it by courtesy carried to extremes. You do it in your very own interest.

This isn't always as easily done as it is said. Letters from your overseas agents are relayed to your export department. Sometimes they deal with technical matters that the export staff can't answer off-hand. They will have to consult the design department or the plant manager. And the man who has the answer may be busy or away. Or, the point in question may not yet have been decided.

### Procedure for Mail

As export manager in an industrial corporation, I introduced the following rules for handling the export mail:

1. For each letter received an answer shall go with to-day's mail.
2. If a specific answer can't be given immediately we write and thank him for the letter, explain why we can't answer it at once, and tell him by what date we expect to do so.
3. At the same time we make a note in a small card index, arranged by dates: "March 30. Reply to letter from Ferreira Melo of 23rd March. Relayed to Laboratory."
4. If, at the date promised, we still can't answer, write again, tell him so, and set a new date.
5. All letters, irrespective of the subject, are written by the export department. Other departments are consulted as needed.

The bare acknowledgment of questions that we couldn't answer

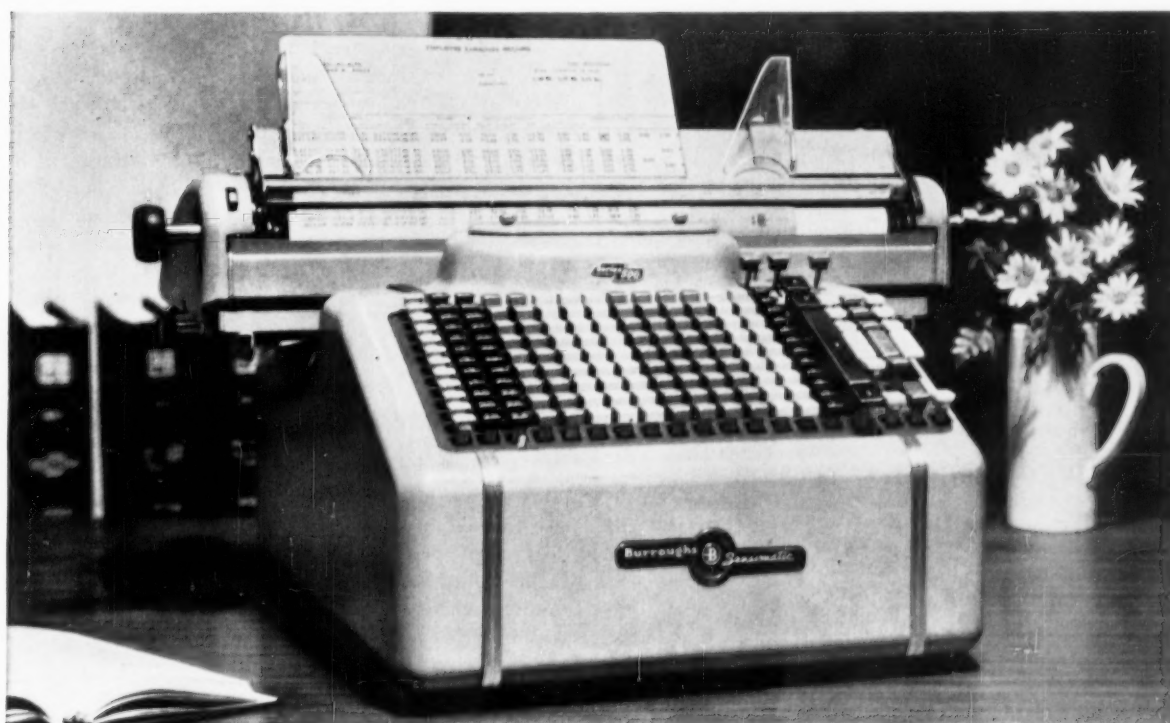




Big like Fuller Brush Company



Or Small like Dy-Dee Wash, Detroit



## These Burroughs Sensimatics savings can be yours

It's the same refrain from users of Burroughs Sensimatic Accounting Machines everywhere: Far more bookkeeping done far faster—at far less cost!

"The Sensimatic 400 enables us to keep a set of purchase cards, plus our accounts receivable, at considerably less than just the receivables ledger cost previously." So says Fuller Brush Company, Hartford, Conn. Doing an \$80,000,000 volume of business yearly, this 50-year-old firm uses 10 Sensimatics to speed transactions with its more than 6,000

widely known "Fuller Brush Men."

And Detroit's Dy-Dee Wash, Inc., leading local diaper service, reports: "We could double our present volume and still handle all of our records on our *one* Sensimatic. A lifesaver to a small office with a large number of small transactions!"

Versatile? Yes! The Sensimatic's exclusive 4-jobs-in-1 sensing panel automatically directs the Sensimatic through every general accounting operation, simple or complex. And to adapt the same machine to any new bookkeeping system—now or in

the future—just change slip-in panels. Result: Unparalleled speed, versatility, simplicity of operation and extraordinary savings . . . in any and every accounting operation.

For a savings-wise demonstration, call our local office, Burroughs Corporation, Detroit 32, Michigan.

"Burroughs" and "Sensimatic"—Reg. T.M's

Wherever There's  
Business There's



## For the business man who refuses to stagnate



**H**ALF the world is half asleep! Men who could be making *twice* their present salaries are coasting along, hoping for promotions but doing nothing to bring themselves forcefully to the attention of management.

They're *wasting* the most fruitful years of their business lives . . . throwing away thousands of dollars they may never be able to make up. And, oddly enough, they don't realize—even remotely—the tragic consequences of their failure to forge ahead while time is still on their side.

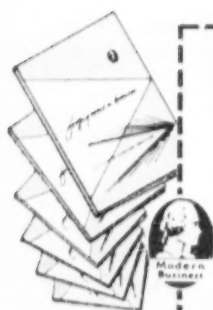
These are the men who are unknowingly headed for the frustrations and the disappointments of mediocrity. They'll go part way up the ladder and down again by the time they're fifty years old. They'll be executive material in their twenties and thirties—and clerks in their fifties. They'll have high hopes for themselves and their families while they're young; but only *struggling, skimping and regret* later on when their earning power should be at its height.

### Send for Your Free Copy of "Forging Ahead in Business"

If you want to discover how to succeed while you are still young—if you want to avoid the heartbreak of failure in later years—send today for "*Forging Ahead in Business*" . . . one of the most practical and realistic booklets ever written on the problems of personal advancement.

Here you will find—not a "pep talk," not an academic lecture—but cold, hard *facts* on how to improve your position and increase your income. You will be told what the qualifications of an executive are in today's competitive market . . . what you must *know* to make \$15,000, \$20,000 or more a year . . . what you must *do* to accumulate this knowledge.

"Forging Ahead in Business" was written for mature, ambitious men who seriously want to get down to bed-rock in their thinking about their business future. If you feel it is meant for you, simply fill in and return the coupon below. Your complimentary copy will be mailed to you promptly.



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at once was surprisingly beneficial. The general agent knew that we had received his letter, and that we were anxious to help him. In cases when he did not absolutely need the information in order to go on working, our first reply had practically the same effect as the subsequent more informative reply to his question. And even in cases when our answer was essential to him the psychological effect of our attitude was remarkably helpful.

### Think as He Thinks

It all boils down to this: You have to put yourself in his position, feel his motions, think his thoughts—and act in consequence. "If I were he, what would make working for his products attractive to me? Which attitude and procedure by my supplier would make me react favorably? What would I need to be told, in order to make me understand it and act on it?"

This is mainly a question of your attitude. But it requires a good deal of knowledge and understanding too. You have to know Sr. Ferreira Melo as an individual. You have to know a lot about his company and his employees. You have to know the habits of his customers. And, incidentally, don't overlook national prejudices and jealousies. The integration of Europe has hardly started, and in many European countries people are still scowling across their frontiers, even where the governments on each side of them are co-operating.

If you put yourself on the customer's side of the counter—in this case the ocean—you will easily find out what your export department should do in order to win the locker-room competition and to get the maximum result out of the working hours you have won. Here is a checklist of steps to be taken:

### Information on merchandise:

Give your general agents anything they could conceivably use, whether they ask for it or not. Draw the limit only where trade secrets call for reticence. It does *not* suffice to send them ad proofs and direct mail material intended for consumers. The task of your general agents is to *teach* retailers and consumers. And every teacher has to know more than his students.

**Sales promotion:** Just how far does it pay to go? How would you

organize your sales if you were working *in his country*? How would you train your salesmen and your dealers? How much of that can you get him to accept and accomplish?

**Marketing:** What is the market potential? Are consumers sold on the use of your kind of products? Does your general agent base his estimate on actual demand and previous sales only, or does he think in terms of developing the market?

**Advertising:** Which consumer reactions do you aim at? Is your home market material suitable? Should it be translated, touched up, or rewritten entirely? Will your general agent or his advertising agency be able to do that without your guidance?

**Shipments:** Here is a field where you can score points in the locker-room competition by saving your agents a lot of trouble and irritation. Advise him as soon as possible of any changes of shipment dates. You can safely count on eliminating 50 per cent, perhaps 75 per cent, of the ill effects of shipment delays by telling your agent about them in advance. If possible, give him an explanation that he can pass on to his customers. Few things are more frustrating to an importer and wear thinner his interest in working for you than being repeatedly compelled to tell his customers that the goods should have been shipped from his supplier long ago, that he can't promise when they will arrive, and that he doesn't know the cause of the delay.

Weed out all causes for agent irritation, remove, or help him to overcome, obstacles in his work for you, give him assistance tailored to his needs and his ability. Neither means will cost you much, but they will pay handsome dividends in more and better agent's working hours for your products.



"But you must know my husband! He's the hardest working one here."

# The School Teacher

EVERY PERSON reaching adult years looks back with affection to at least one teacher who helped him open the right doors toward the future, and occasionally he hears the voice of her counsel in times of difficult decisions. He recalls the quick compliment for the task well done, as well as the occasional rebuke for the moment of mischief.

The teacher who is dedicated to a career of service has the knack of coaxing and pushing men of limited gifts to high goals, of encouraging men of high

talent to superb attainments. The community is never out of debt to her for services rendered, and her rewards can't be measured in the coin of the realm. She has a secret treasure of satisfaction in the accumulated evidence of men and women in high places who have responded to her friendly guidance.

To impart wisdom by precept, and to mould character by example, is a large responsibility accepted by many noble men and women in our schools. They are entitled to the understanding of all our people; the young in anticipation of life and the old in appreciation of the benefits received.



*This advertisement is one of a series devoted to the business and professional men and women who render distinguished service to their communities.*

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Eastern Connecticut is the new land of industrial opportunities. Here is an area with plenty of elbow room for plants and employees and with communities anxious for new industries. There are available industrial plants from 10,000 to 300,000 square feet, industrial sites from 5 to 1,000 acres. The location is central to New England's technical schools and research facilities and only a short drive from Connecticut's beautiful shoreline. Look into Eastern Connecticut. See why many of the country's leading industrialists are building for the future in this ideal area.

### BRYANT ELECTRIC ADDS NEW PLANT IN EASTERN CONNECTICUT

The Bryant Electric Co., wholly owned subsidiary of the Westinghouse Electric Corporation, has chosen Danielson in Eastern Connecticut for a new plant. Mr. N. L. Goodell, general manager of Bryant, stated: "Selection of the Danielson plant site was made after a long study of many excellent industrial locations in Connecticut. Danielson has many obvious requirements for an industrial operation such as the splendidly located building which we are using, good rail and highway facilities, and an excellent supply of electric power and water. But equally important, we were impressed by the warm friendliness of the people and their desire to have us there".



L. N. Goodell, General  
Manager, Bryant Electric Co.

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Information on recreational, cultural and scenic attractions, types of residences, colleges in area. Illustrated with pictures and map.

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Send for folders described above. Write or phone LeRoy Jones, Chief of Industrial Division, Jackson 7-6341, extension 548. Connecticut Development Commission Room 475, Hartford 15, Conn.

# Executive BOOKSHELF

GROVER AMEN

## *A round-up of the latest in business reading*

- *Building more efficient office management*
- *Management of foreign operations*
- *A study of modern industrial design*
- *How to handle income tax grievances*
- *Problems in marketing new materials*

## *Running the office*

OFFICE MANAGEMENT by Charles B. Hicks and Irene Place. Allyn and Bacon, Inc., 70 Fifth Avenue, New York 11, N. Y., 548 pages, \$8.65.

From 1870 to 1950 the number of clerical workers increased five times as fast as the rate for all workers. Salaries of office workers amount to \$35 billion or one-ninth of the total national income. Reducing office costs by \$3,000 annually is the equivalent in terms of net profits of an increase of \$70,000 in sales. Such quoted figures, even when rough, the author points out, indicate the need for increased scientific study of office management costs and problems.

This is a broad but detailed study of the subject with attention balanced between the technical and managerial elements. The six parts include 26 chapters and are organized under the topics: management and the office, planning and organization, control, simplification, the human element, and service units.

## *Finance and fascism*

CONFESSIONS OF "THE OLD WIZARD" by Hyalmar Horace Greeley Schacht. Houghton Mifflin Company, Boston, Mass., 484 pages, \$5.50.

"Confessions" is not too apt a word for the egotistical and frequently defensive tone of this otherwise interesting autobiography.

Dr. Schacht served as president

of the German Reichsbank both under the Weimar Republic and Adolph Hitler. This narrative ranges from his youth in old Germany, to his first job as a newspaper reporter, and through his acquittal at the Nuremberg trials.

Dr. Schacht is at his best when he does not have to explain his politics and is free to ruminate quietly on his personal experiences or boast of his financial achievements.

But when explaining his political part in the Nazi regime, Dr. Schacht is still cautiously on the defensive. From a master of self-survival, as well as finance, a few more confessions might have been edifying.

## *American business abroad*

PLANNING OVERSEAS OPERATIONS, International Management Series Number 1, International Management Association, 1515 Broadway, Times Square, New York 36, N. Y., 68 pages, \$1 (AMA members), \$1.75 (non-members).

THE CHALLENGE OF A NEW ENVIRONMENT, International Management Series Number 2, International Management Association, 1515 Broadway, Times Square, New York 36, N. Y., 47 pages, \$1 (AMA members), \$1.75 (non-members).

These two pamphlets contain 13 papers on the general topic of foreign operations management. They were first presented last Spring at a conference held by the International Management Association, AMA's new subsidiary.

Pamphlet Number 1 studies the

central problems, needs, and risks involved in conducting business abroad. It includes papers on criteria for selecting a specific country, organization, finance and tax problems, and government resources.

The second booklet is concerned with the actual problems of marketing and personnel in a foreign country. Topics include distribution patterns, market research, advertising, and industrial relations in Latin America.

## *Form, function, and profits*

SHAPING AMERICA'S PRODUCTS by Don Wallace. Reinhold Publishing Corporation, 430 Park Avenue, New York, N. Y., 193 pages, \$10.

To illustrate the gap that once existed between esthetic and technical design, the author quotes the story of the manufacturer who attempted to beautify the mechanical appearance of the typewriter.

He first hired a painter who after several weeks of work proposed that the unbroken surfaces of the machine be embellished with lush rose clusters. The manufacturer, sensing this was not quite the



proper solution, hired a sculptor who brought back the typewriter—now bearing a cast relief of cherubs. The manufacturer did not give up yet and hired an architect. This time the result was an intricate and proportioned facade of Ionic columns.

This book shows the methods of modern industrial design and its progress in uniting form and function to increase sales. He notes that a major problem is that the public "is always torn between attraction

# Top Management's Need

... for sound credit and financial management in competitive markets cannot be overstated. Speed and certainty in reaching right decisions are essential. Failure to spot key points loses sales, costs time and results in bad debts.

Yet management has little time to train new staff members ... to help those to be given added responsibilities ... to refresh experienced employees. NCO's Correspondence Course in Credit Analysis fills that need.

In 1955-'56 over 1000 men and women enrolled in NCO's Course to learn more about the complex fields of finance ... credit ... management ... personnel development. 40% are officers in their companies or are active in departments other than credit ... 40% are credit managers or assistants ... 20% include bank officers, accountants, lawyers.

## *A Sample Question from the Course ...*

You are a creditor of Thomas Corp. which is purchasing the assets of Ames Co. List four ways in which Thomas Corp. can finance that purchase. As a creditor, which of the four ways would you prefer?

The Fall '56 Course starts in October, runs for six months, costs \$60 including 375 page text. Just write for booklet outlining contents, methods, faculty. No obligation, of course.



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## New Inland Steel Building foretells office life of tomorrow

*Bold new design concept of Chicago building includes in-floor power, heating and air conditioning — made possible by*

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For more information on the interesting Inland Steel Building design, or for Catalog 270 which describes Milcor Cellufloor construction, write to address listed below.



*Cross section of the Milcor Cellufloor installation in the Inland Steel Building, showing the cells and the 2-inch concrete fill which covers them. The letters in the cells show the pattern of use developed for this installation. (Key: A-Air; P-Power; T-Telephone.)*

Milcor Cellufloor provides variable capacities to handle any type of electrical need. Cells are spaced on 6-inch centers to permit the installation of service outlets at virtually any point on the floor.



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to the new and fear of the unfamiliar."

In his 31 case studies of effective design, Mr. Wallance's subjects range from telephones, pots, and pans, to swimming suits and carpets. Reproductions and photographs are excellent.

### Tax problems

HANDBOOK OF SUCCESSFUL TAX PROCEDURES by J. K. Lasser Tax Institute. Simon and Schuster, Inc., 630 Fifth Avenue, New York 20, N. Y., 276 pages, \$4.95.

In 1913 only about 358,000 income tax returns were filed. This figure by 1952 had risen to over 356 million. The top surtax rate in 1913 was 6 per cent, while to-day's is 91 per cent.

The enormous increase in tax rates and taxpayers has brought up the work force of the Internal Revenue Service to 50,000—more than twice its size in 1940.

How this service operates and processes income tax reports and payments is described in this book. The authors' intention is not to provide information on how to file a return, but on how to handle disagreements between you and the service. Of particular interest should be the chapter entitled "How the Treasury Department Catches Tax Cheaters."

### New materials' markets

THE DEVELOPMENT OF MARKETS FOR NEW MATERIALS by E. Raymond Corey. Harvard Business School, Division of Research, Soldiers Field, Boston 63, Mass., 265 pages, \$4.

This book reflects the extensive and detailed research the subject required. Scores of case histories explore specific marketing problems encountered by major producers of aluminum, fibrous glass, and plastics.

### Tips on tools and methods

TECHNICAL AIDS FOR SMALL BUSINESS, Small Business Administration, Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C., \$1.

This is a collection of a series of papers published by the SBA to provide shop owners and operators with practical information to improve technical methods and materials handling.

The first section deals with operations problems and includes tips

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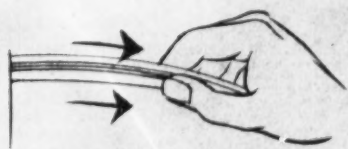
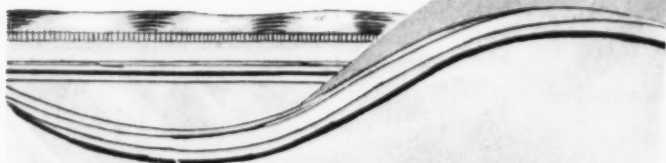
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ZIP LIP is based upon the tongue and groove principle. Bag is sealed simply by pressing tongue and groove together by pressing thumb and forefinger with sliding motion. (Like creasing a piece of paper.)



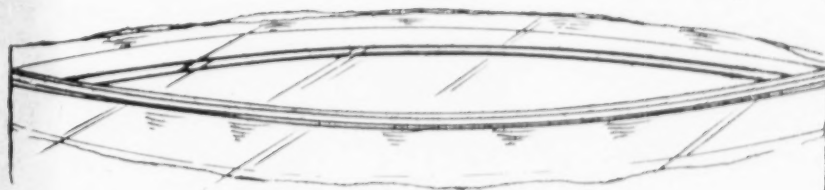
Seal cannot be broken by internal pressure or external tension, yet may be released easily by pulling seam open with thumbnail. An inflated ZIP LIP bag will support the weight of an adult, yet can be sealed and reopened by a child.



ZIP LIP bags are available in plain and printed polyethylene in many sizes. Special designs include compartmented bags and header sleeves for identification cards.

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Here is the first practical achievement in machineless sealing . . . a bag which tenaciously protects its contents, yet makes them readily available for inspection or use.

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## OLD HANDS AT EXPANSION



ONE of the finest examples of company growth is the brewery of C. Schmidt & Sons, Inc., Philadelphia, and their subsidiary in Norristown, Penna., whose achievements in the development of original and improved methods have consistently pioneered new standards in the brewing industry.

In 1933, when management embarked on a long-range series of expansion and modernization programs, annual brewing capacity was little more than 200,000 barrels.

Today, "Schmidt's of Philadelphia" can produce over two million barrels... the result of perpetual research, a multi-million dollar investment, and co-ordinated "turnkey" services by Kuljian.

Schmidt's success demonstrates the wisdom of using single source engineering services—the Kuljian "turnkey" system of integrated planning, design, engineering, procurement, and construction supervision.

We would like to see more businesses use this simple, economical procedure whenever outside engineering services are needed... even to include initial operation of the finished project. Try it yourself, next time you're planning a building program.

No matter what your industry—or the problem involved—we serve you well in the preparation of your plans for tomorrow.



May we send you these booklets?  
... why a turnkey project is best for you  
... the refreshing story of a glass of beer

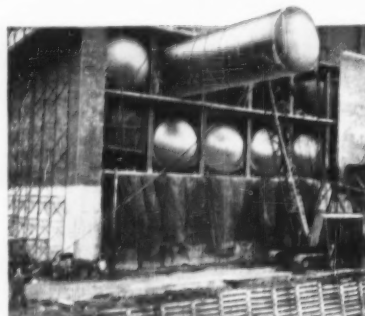
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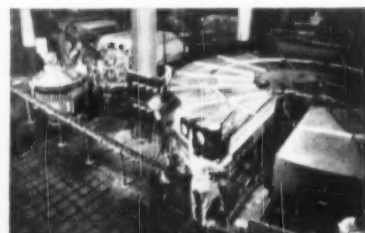
# The Kuljian Corporation

engineers • constructors

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One of 30 glass-lined storage tanks undergoing delicate hoisting operation. Tank weighs 18 tons—has 1200-barrel capacity.



The Bottling Department now contains 11 complete lines in both plants—for washing, filling, and pasteurizing two million bottles and cans a day.

on such topics as machining metals, alloys, and plastics.

The second section contains eleven articles on care and maintenance of tools and equipment. The last piece is a brief summary of the facts and uses of titanium. Bibliographies conclude each of the 23 chapters.

### Thrashing it out

TECHNIQUES OF PLANT MAINTENANCE AND ENGINEERING, 1936 Plant Maintenance Show, Inc., 341 Madison Avenue, 248 pages, \$10.

Texts of sixteen papers and summaries of fifteen roundtable discussions are included in this report—the seventh in an annual series compiled from the Plant Maintenance and Engineering Show.

Of particular value are the answers to 1,100 questions which serve to get at the specific roots of problems posed.

Industries receiving special attention this year are air transport



CORBIN PHOTOGRAPH FROM DEYANET

shops, chemical plants, petroleum refineries, and paper and textile mills. The book includes over 100 illustrations, charts, and tables.

### Facts and where to find them

INFORMATION FOR ADMINISTRATORS by Paul Wasserman, Cornell University Press, 124 Roberts Place, Ithaca, N. Y., 375 pages, \$6.

Subtitled "A Guide to Publications and Services for Management in Business and Government," this book is a good and definitive summary of information sources. Bibliographies also suggest research and background sources.

Appendixes list depository libraries, university bureaus of business and government research, and sources on foreign countries.

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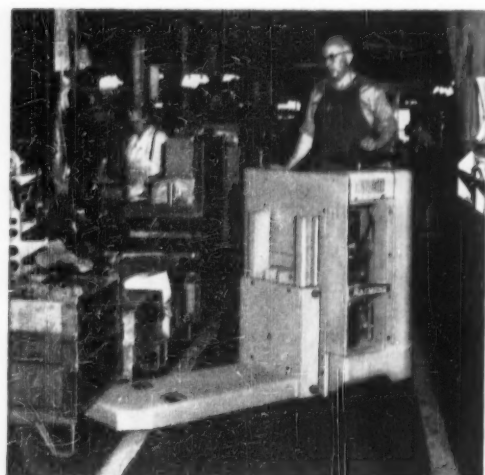
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## CREATIVE OBJECTIVITY

Continued from page 51

where the beauty of stone in its essential purity and simplicity of form dawned upon him. At or toward the "trivial" end of the scale, creativity can be experienced by everyone, and almost every day, wherever eyes are observant enough and imagination is sensitive enough to put two things together in a new relationship.

For example, the alert eye and the responsive mind of a man who has three minutes to wait for the 8:05 commuter train can observe the aged and cracked paint surface on the clapboards of an antiquated railroad station, too long waiting for the maintenance crew's refurbishing brush. In his creative flash he sees the "beauty" of the chance arrangement of the paint cracks. It is fitting subject for an abstract painting, and, as such, has completely transcended what to others may have been merely an unsightly blemish on the woodwork.

Note that in describing this observation of cracked paint as a "creative" act, there was not necessarily any use of brush to make a painting, or of pen to make a poem, or of camera to capture the true appearance of the fragment. The "act" was the seeing, the perceiving, and the responding.

Although John Dewey spoke of "Art as Experience," I feel sure he would have accepted the idea that without the sympathetic or empathic response to an esthetic experience, there is no art.

Now this particular responsive act may be the initial step in a series of creative ventures. The image may be retained perhaps until the week-end when the business man can turn from his main occupation to explore the creative joys of painting. It is of course quite unnecessary that any accurate memory of the paint cracks be retained. Even if they were reproduced exactly this would just be a copying, a thing the Leica with Kodachrome could have done. No, the esthetic vision of the paint cracks is a point of departure. The initial recognition of the beauty in the simple forms, and the feeling of response, were the signals that here is a worthwhile road to follow.

The creative act of the painter will be the capturing of the sensa-

tion of the beauty previously experienced. This may take the form of color masses of various shades and gradations of hue which capture for him that satisfying response which he had experienced when he perceived the esthetic significance of the tracery of paint cracks.

Now when the method of painting employed is non-representational, such as is increasingly being practised by our current crop of young artists, the expression of the esthetic response is admittedly experimental.

When the artist surveys the result of his painting, he may feel that the composition has not adequately "depicted" the experience which he had felt; that the colors are too violent to cover the gentler emotion he had experienced. He may either adjust his colors or, what is probably more satisfactory, start another canvas. I make this point because it is often a rewarding experience to confront three or four canvases and observe just what differences in expression have come into being. Such comparison or contrasting, as the case may be, may well serve to sharpen the focus and suggest changes that should be made in one or more of the canvases or indeed bring out the stimulus to a new painting.

### Recapturing Freedom

Now just what is the "value" of this cultural pursuit of painting to the business man? I think the main value lies in the recapture of his freedom in at least one area of his living. He alone has the right to make his own decisions while engaged in his painting. Here is a domain of no compromise to meet the wishes of anyone. If he wants a blue mass of color at the top right hand corner of his canvas, then there it goes and in any shade of blue he chooses.

All week at his office he has disciplined himself within the framework of the organization chart, within the policies of the corporation, within the regulation of the operations manual. In all probability he had helped draw up these charts and policies and methodology—has helped forge his own shackles—but they were conscious

limitations of his freedom. Only his ambition can furnish the stimulus for the practise and acceptance of these disciplines. The reward for this burden of discipline is business success.

When he works within the framework of his canvas, he works under the discipline of his esthetic taste. Here the stimulus is his creative imagination, and his success is the gratification at capturing on the canvas some of that response to the sense of beauty which had sprung from the original perception of the pattern of the paint cracks.

There is nothing trivial about this regaining of freedom in the tiny area of making a painting. This becomes one island of personal liberty in a sea of very much prescribed restriction. It is an island to which he can chart his course, whenever he needs the spiritual exaltation of an independence upon which there can be no trespass.

### More than Just Doing

I have emphasized the experimental approach to painting, but this same exercise of the freedom of personal decision-making can exist also in the *looking* at pictures as well as in the painting of them.

For several weeks I have been making hundreds of trips through our gallery where a retrospective exhibition of ten years' paintings by John Grillo is being held. There are some 80 paintings displayed, and although the first hanging gave me the impression of a delightful though bewildering complexity of avant-garde painting, I am at last able to encompass mentally, observationally, and esthetically the intricacies of these 80 paintings. It has slowly dawned on me that these paintings can be classified under four main categories.

John Grillo himself is probably unaware of these categories, and may even be quite indifferent when I point them out to him on his visit to the gallery. But whether or not the artist was conscious of this grouping of his work into four distinguishable classes, such a selecting and rearranging does give the opportunity to observe the relationships between the members of a group. These observed relationships are very important clues to the creative steps followed by the artist. The emergence of a significant

form can be traced. The evolution of some new symbol becomes clear, a highly personal symbol, yet fraught with broad esthetic meaning.

Here is creativity in action, expressing itself to the discerning eye; perhaps even suggesting a technique of invention that might be useful in part to another artist without any stigma of plagiarism.

What I am claiming also is that this procedure of actually living many hours in close observation of 80 paintings of a competent artist, of visually classifying (and sometimes physically rearranging the pictures), of living through possibly the same steps the artist took in generating these paintings, develops an insight into the very nature of his creativity. This in itself is a very exciting and profoundly satisfying experience.

This manner of observing paintings enhances our perceptiveness, and stores in us a number of visual idioms, enlarges our vocabulary of visual forms and colors, and indeed gives us new competency in visual language.

Intensive observation is not like a casual Sunday afternoon stroll through the Museum of Modern Art—delightful as that may be. It converts "looking" at paintings into the exciting quest for new keys to creativity. It adds a new and deeper dimension to "looking."

Obviously, the use of painting as a means of recapturing a special quota of liberty could be replaced by similar creative efforts in any other field—music, writing, sculpture, and so on. The principal criteria for the selection of areas of creative activity are that they be ones in which there can be a definite feeling of interest and a strong capacity for response. Not feeble responses, but deeply moving inner reactions, which may produce what an artist friend of mine refers to as "visceral tensions." This sensory awareness in any of these fields of creative endeavor is direct and deeply personal. It is our richest and most vivid experience of personal freedom—a freeing from those bonds and disciplines which are inevitable whenever man operates in a group effort, and from which man needs to be freed periodically into the liberating mood of creativity.



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# Turning Points

**CHARLES P. McCORMICK**



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**McCORMICK:** "Born of American parents on foreign soil, and being the son of a missionary, I was susceptible to numerous fears that seemed insurmountable before I discovered faith as a potent antidote.

"Moving from country to country and attending foreign schools conducted in a strange tongue had distinct advantages and disadvantages for me. But the spiritual training received under such an environment was to my very definite advantage.

"My travelling continued after I came to America and started to work. Seventeen years as a salesman took me throughout the length and breadth of this country, but the fears of my youth continued to haunt me. While travelling, I enjoyed observing people and their habits. It was from such observations that I began to form much of my own philosophy. Many of the people I encountered were of great help in shaping my views and pointing out certain paths to follow.

"It is my opinion there are many influences that cause a person to be a success. The first one, of course, is learning all he can in order to make available use of his knowledge when it is needed. The second is learning through the errors of other people what not to do when faced with similar conditions. The third is learning to drop the imitation of people that you have admired through life and make your own face, so to speak, one with which you can live and be happy.

"By face I mean the character of person or environment that one meets in life which influ-

ences your own character upward or downward. You unconsciously absorb and imitate the good things you want and sometimes the bad things; but somewhere along life I believe we become mature when we free ourselves from the patterns that other people give us. Then we feel we are on our own.

"I believe we become successful quicker if we can realize that every defeat, petty or major, can be the groundwork for a great victory. If we can look upon our troubles and problems as spurring us on to overcome them, this in itself is progress and can lead to success.

"Normally you would say that a mild heart attack suffered in Heidelberg in 1952 as a possible result of intense extra strain would be called poor pay for the work I have tried to do. While this has caused me a great period of lay-off from the company, it has also served to make me feel that every available moment is a more valuable one in which to work. In fact, in the past six months, I feel I have done some of my most constructive work.

"All through history it has been proved that people who have been hurt, who have become poverty-stricken, and who have lost practically every single thing, have, even late in life, turned to writing plays or music, painting pictures, even building fortunes over again.

"The mind is a flexible thing. It can take a lot of punishment and it can come back as long as the will power and the ability to dream are present. Therefore a man should be appreciative of the 'plus' but take the 'minus' in order to enjoy the 'plus' more fully."

**M. M. HOLZER**



President, AMERICAN UNION TRANSPORT CO.

**HOLZER:** "I was born in the interior, namely in Graz, the capital of Styria, which was a part of the Austrian-Hungarian monarchy. When I had finished my schooling, I used the money in my savings box to make a trip to the port. I thought that Trieste was too big a port for a young boy with very limited funds, permitting only a few days' living, so I went to Fiume, the only Hungarian port at the time.

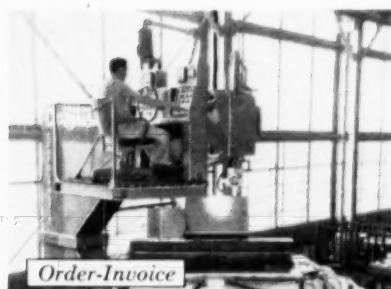
"Fiume was a small town. The most interesting thing, of course, was the harbor. When I came to the port, I saw ships which appeared big to me at that time, namely steamers of the Austrian Lloyd, discharging cargo from India. I saw jute in bales, hides, valonia, and cotton, all coming from India. I saw the discharging of lumber from French ships coming from the north coast of Africa. I saw nitrate from Chile. I saw Hungarian sugar for export, electric railroad cars which came from a famous factory in Budapest, Ganz & Company.

"In short, I saw what one could briefly call 'products of the earth'—commodities, semi-finished, and finished products; or international business, meaning business with more or less all nations of the world. And there were only three types of international business—banking, insurance, and transportation. Of the three, transportation is the only one which has actual contact with the product. The others in the main deal with them on paper only.

"This last consideration influenced me to try to get into the transportation business and I promptly got a job in the biggest forwarding firm which existed there at the time."



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The past year, the Port sunk \$64,000 in 1,400 galvanized wire baskets to house the salmon and smelt, cod and shellfish that inhabit frigid haunts of the cold storage terminal.

What's more, the Port is so pleased with the savings its baskets have helped it gather in the past year that it probably will spend as much more in 1956 to "basketize" its whole fish storage operation.

### KING-SIZE DUE

Up till now, the Port hasn't been able to use baskets for the halibut. Many halibut are too big. But some king-size baskets are planned for the big fish, too, quick freeze. They're

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That manhandling, spread out over the thousands of tons of fish that move in and out of the warehouse each year, represents the thousands of dollars the Port hopes to save.

The baskets can be piled three-high for storage or shifting via lifttrucks. Out of use, they're collapsible and don't take much space.

Cold storage has been a Port headache for years. Port Commissioners think they've found a way to help pull it out of the red.

It's not in the bag, but Commissioners hope it's in the basket.

Fish don't leave the baskets from the time they move out. Why buy baskets—for the halibut or otherwise?

The answer is, to save cash. Port general manager Howard M. Burke is cautious about predicting future bonanzas, but he admits the Port thinks the baskets may save it \$20,000 a year in handling costs.

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## SYMBOLS OF BEAUTY

Continued from page 52

Here beauty has been obtained through the fundamental principle of rhythm, involving repetition, gradation, and harmony.

A different concept of beauty is typified by the Alexander III Bridge over the Seine at Paris, a steel arch span of graceful proportions. In this case, beauty has been interpreted in terms of decoration, and the architectural treatment consists of statuary, sculptured relief, and applied ornamentation.

Still another concept of beauty is represented by the Landwasser Viaduct of the Albula Railroad in Switzerland. This is a series of tall piers and arches on a horizontal curve. Here beauty is obtained through utmost simplicity of line combined with boldness of proportion and magnitude.

In each of the structures cited, the design is appropriate to its setting. The three examples typify what may be designated as poetic, artistic, and functional beauty, respectively. No one of these is the complete or universal solution.

## Elements of Beauty

In general, the following elements should be considered by the bridge designer: Harmony with environment, internal harmony, composition, symmetry, clarity, simplicity, grace, proportion, gradation, emphasis, framing, punctuation, rhythm, repetition, alternation, inflection, relief, contrast, continuity, interest, scale, light and shadow, color, and illumination.

Nearly all of these elements of beauty are akin to those sought in musical composition. Someone has aptly said that "architecture is frozen music." A beautiful bridge is a symphony.

Before the advent of steel it was necessary to build bridge towers of masonry. The 19th Century designers had to depend upon stone for architectural character.

When steel came into use, some engineers apparently missed its artistic possibilities and requirements. Steel towers and spans were built along strictly utilitarian lines and, in some mistaken ideas of economic design, the designers seemed to go out of their way to violate esthetic intuition.

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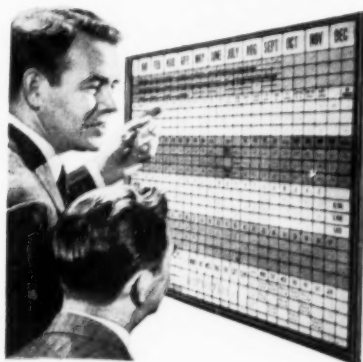
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architectural effects in steelwork through the addition of decorative details and ornamentation. That was the era of the heavily ornamented bridges, and of the "Beaux Arts" concept of artistic design. The architect left the main lines of the structure to the engineer, and the engineer gave the architect a free hand to add embellishments. But filigreed portals and finials could not disguise inartistic lines and awkward proportions.

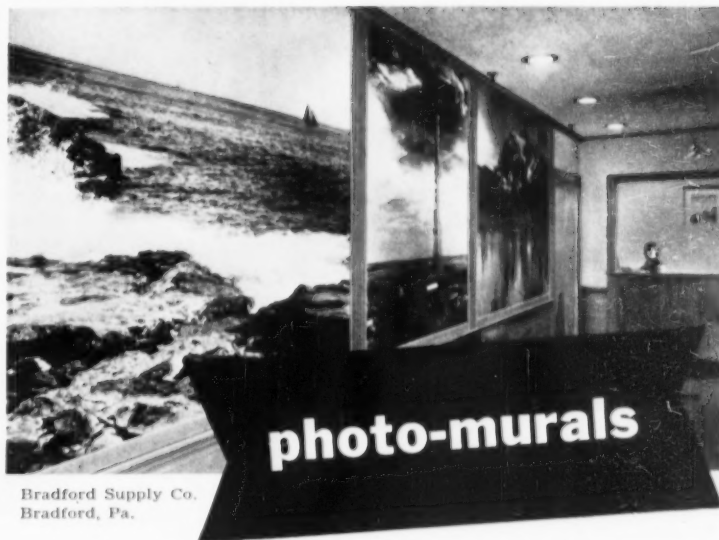
### Present-day Trends

We have now entered a third stage in the evolution of bridge design, in which the true artistic potentialities of steel are beginning to be realized—not by embellishment or decoration but by the development of structural forms that are inherently beautiful. The bridge designer of this era has to be both engineer and artist combined. To a thorough understanding of structural design and function he must add a strong feeling, both innate and trained, for beauty of form, line, and proportion.

The spans of to-morrow will embody simplicity of form, beauty of line, grace of proportion, harmony of color, and radiant illumination. The two bridge types that most naturally yield beauty of form, line and proportion are the arch and the suspension bridge. Other types of bridges have been modified, strained, or camouflaged to simulate them, but the imitations are only a tacit tribute to recognized esthetic superiority.

Fifty, even 25 years ago, the word "beauty" was never mentioned in college courses in Bridge Design. We were told all about stress analysis, strength of materials, proportioning of sections, test results, specifications, fabrication, and erection. But not a word was said about artistic design, about the esthetic considerations in the design of engineering structures. There was no whisper of the thought that bridges can be beautiful.

However, even as a student, I felt that bridges could be planned and built to be beautiful. I read everything available on the subject of esthetic principles in design. I discussed the subject with friends who were studying architecture. I visited existing bridges, climbing over them and under them, studying them from every angle, to de-



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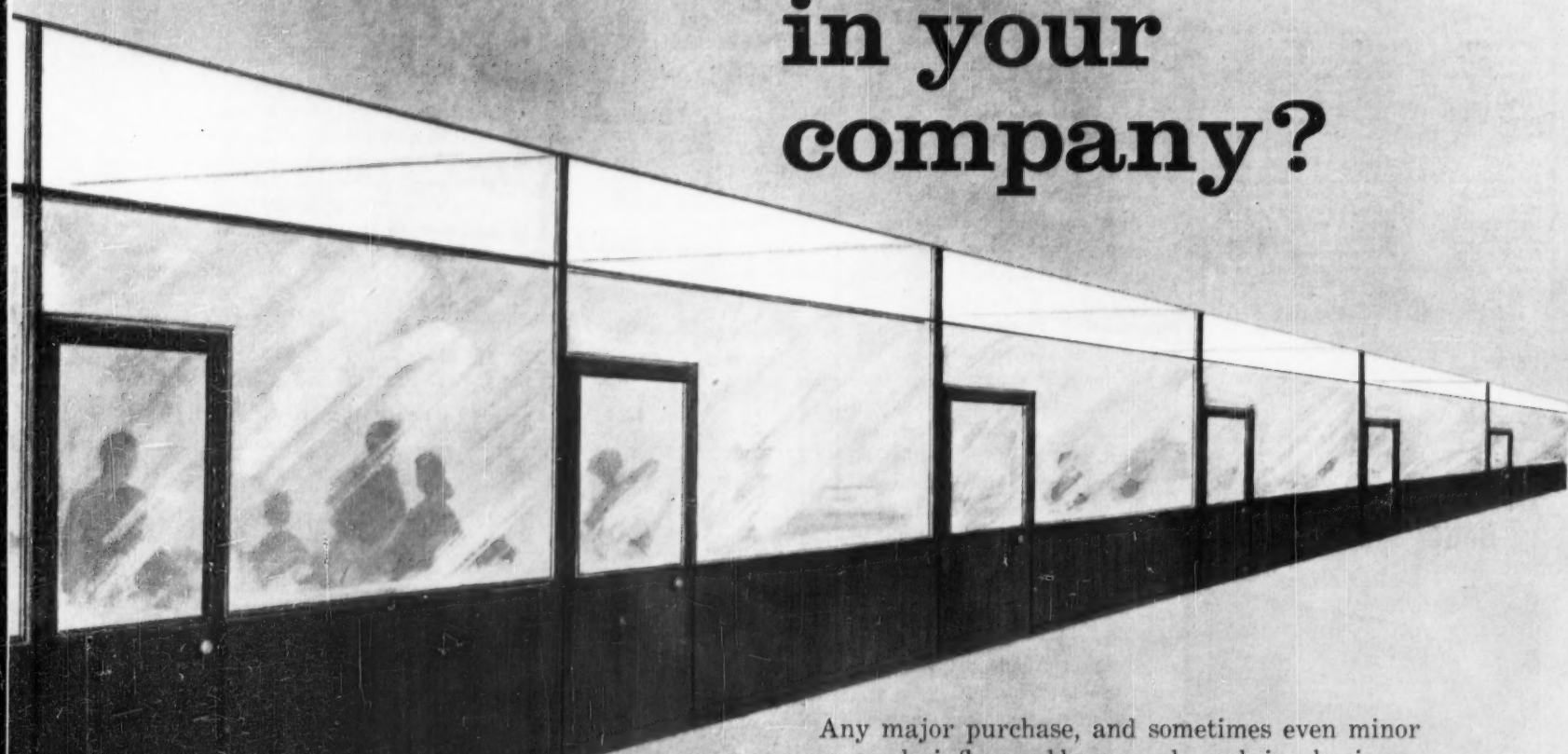
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termine why some structures were ugly, commonplace, and depressing, while others were beautiful and inspiring.

During the years that followed, in my contacts with prospective clients, I found that any talk about scientific design left them cold; technical excellence they took for granted. There were two things, however, that did interest them. One was economy of design, and the other was beauty of design.

These were things they could understand and appreciate. Economy of design was comparatively easy to secure—by resourcefulness in selecting bridge types, proportions, and forms of construction. But beauty of design required pioneering beyond established convention and precedent.

If I were an engineer with a primary interest in industrial building, whether it be a simple processing or assembly plant alongside a highway, or a stupendous assembly of chimneys, or converters of a steel mill by the Great Lakes, or the ghostly shapes of an oil-cracking refinery in Texas or New Jersey, I would find other comparable symbols for my esthetic approach to enjoyment of the works of man.

### The Esthetic Conscience

The business man need make no apology for his daily effort to create wealth through the conversion of raw materials into finished goods for the service of his fellow man. However, if in his work he has no conscience about the way he disfigures the community with ugly buildings, destroys natural beauty with unnatural things which conflict with the surroundings, then he stands accused before a world which should take on added beauty because of man's talents and understanding. The monotonous brick rectangles with their surrounding ghettos were standard patterns of ugliness in the 19th Century. Business and industry has learned both the social and artistic benefits of beauty when products, buildings, and highways are designed with an esthetic eye.

The vocational approach to beauty calls for a community awareness, and it should be reflected in everything we offer to our fellow man, whether it be a railroad station, factory, a department store, or, to let me have the last word, a bridge.

## PROBLEM

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## ANSWER

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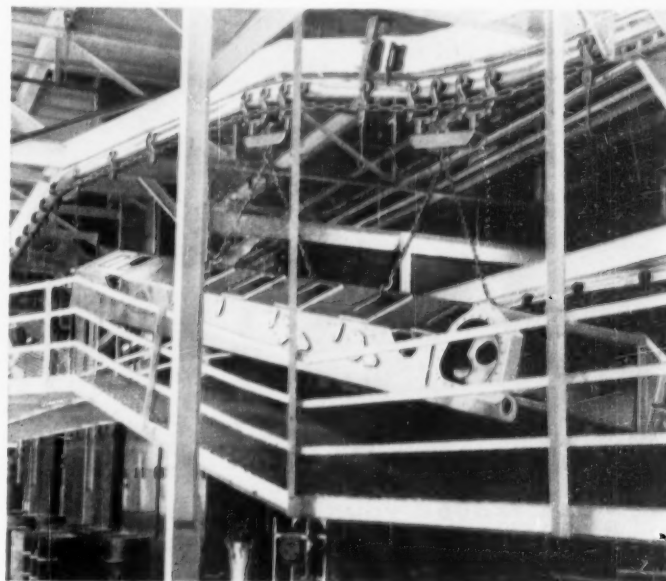
Planet Corporation engineered, designed, and installed the trolley conveyor pictured below which made use of Allis-Chalmers' existing plant facilities.

The Planet X-678 Trolley Conveyor has 6" trolley wheels which run on a 7" I-Beam track, capped with a 12" I-Beam. Because of the tremendous load, the installation is floor supported.

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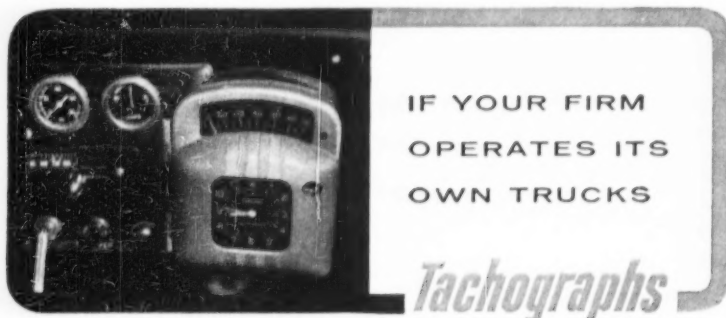
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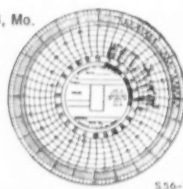
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# MATHEWS

SEPTEMBER 1956 • 117



*Salesman calls ahead for appointment*



*... is welcomed without waiting*

## Telephone call helps close \$9000 sale

Here's how it happened, as told by the sales manager of the Geo. S. Thomson Co., industrial supplier of Phoenix, Arizona:

"First thing one morning, one of our salesmen called a customer in another city to ask for an appointment. It was a good thing he called, for the customer was about to leave town for several weeks. The salesman left that morning, saw his customer that same afternoon, and closed a \$9000 sale.

"In this case the call cost \$1.55. And in every case we find that calling ahead for appointments pays for itself many times over."

• • • • •

Whatever you make or sell, you can prove to yourself that the planned use of the telephone pays off in profits. We'd like to give you some specific suggestions how. Just call your Bell Telephone Business Office.

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### LONG DISTANCE RATES ARE LOW

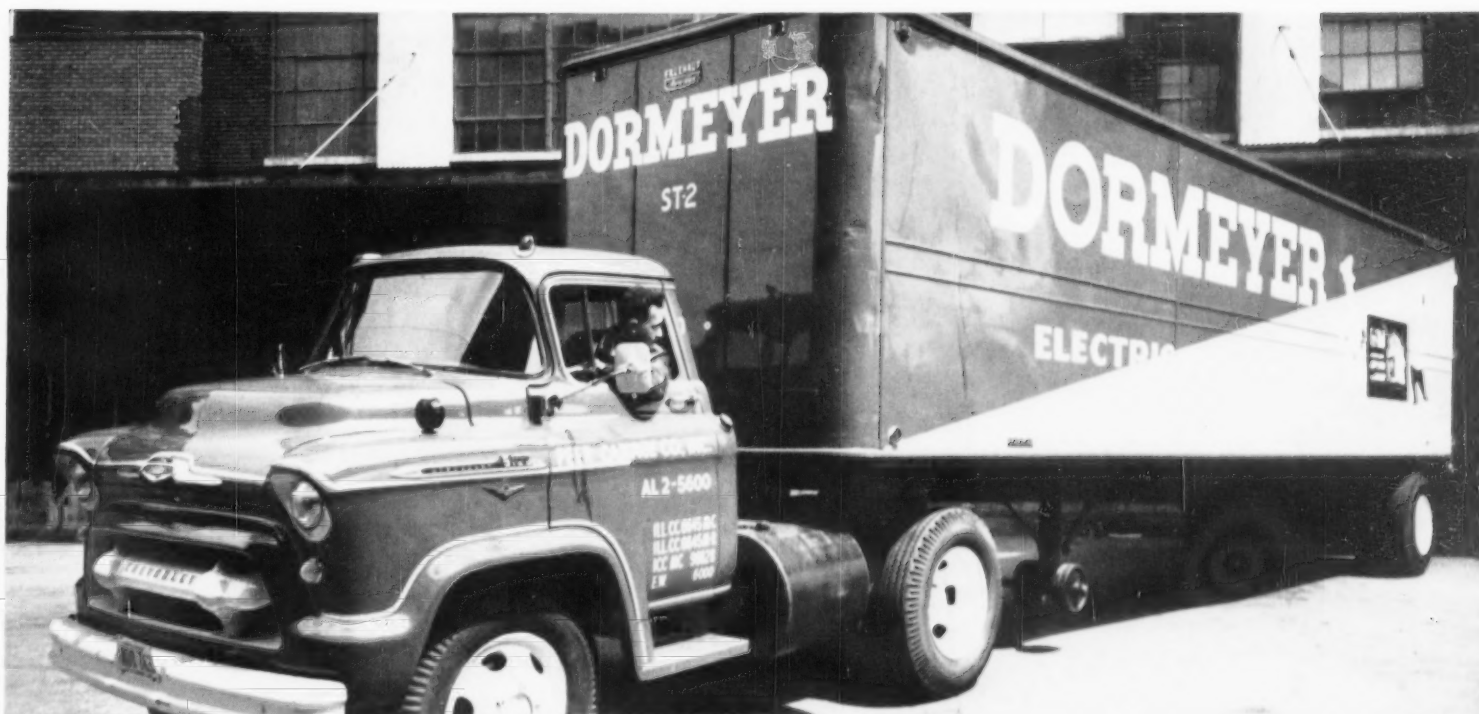
*Here are some examples:*

Baltimore to Philadelphia	55¢
Cleveland to Pittsburgh	60¢
Dallas to St. Louis	\$1.35
Phoenix to San Francisco	\$1.40
Los Angeles to Washington, D.C.	\$2.50

*These are the daytime Station-to-Station rates for the first three minutes. They do not include the 10% federal excise tax.*

Call by Number.  
It's Twice as Fast.

PERFORMANCE REPORT ON AMERICA'S BEST SELLING TRUCKS:



**"THE COST OF UPKEEP IS SO LOW THAT I'M SWITCHING TO ALL-CHEVROLET!"**



... says Mr. George J. Pyre, Vice President, Peer Cartage Company, Inc., Chicago, Illinois—a typical user of Chevrolet medium-duty trucks.

Mr. Pyre, whose Chevrolet trucks serve the Dormeyer Corporation, manufacturers of home electric appliances, states: "We are not only proud of the 'big new look' that our recent purchase of Chevrolet trucks gives us, but it added to our fleet's efficient, economical service. The cost of upkeep is so low that I'm switching to all-Chevrolet. These trucks have eased the strain on drivers . . . added comfort to the driver's needs."

Mr. Pyre's high opinion of 1956 Chevrolet trucks is fully shared by his client, Mr. James E. Archambault, President of the Dormeyer Corporation. In Mr. Archambault's words, "We have found that Chevrolet Task-Force trucks give us more on-the-job road time in ratio to maintenance than any other trucks we have tried. When you're operating a fleet of trucks like we are, Chevrolet trucks win the prize every time for low maintenance, easy upkeep and on-time deliveries." See your Chevy dealer soon! Chevrolet Division of General Motors, Detroit 2, Michigan.

**Modern features make new Chevrolet trucks the Performance Champs of the Middleweight Class!**

**New** high-powered V8's with efficient, short-stroke design and modern components!

\*Optional at extra cost.

†Optional, extra cost, series 5000 through 10000 models.

**Extra high-compression 6's**—the world's most popular truck engines—by far!

**Great** automatic transmissions\* available for whichever Chevy truck you choose!

**New Powermatic†**—the first automatic transmission designed specially for big trucks!

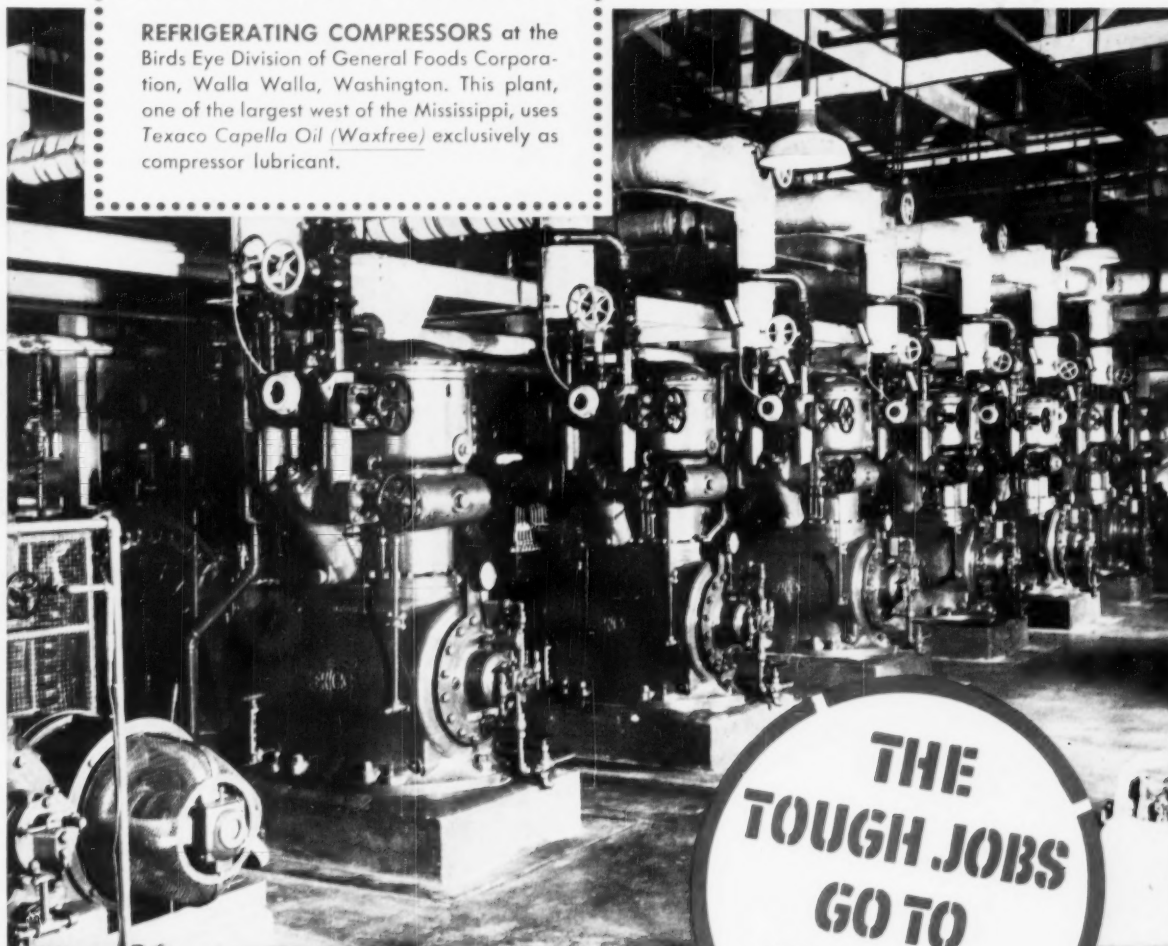


## **NEW CHEVROLET TASK-FORCE TRUCKS**

Anything less is an old-fashioned truck!



**REFRIGERATING COMPRESSORS** at the Birds Eye Division of General Foods Corporation, Walla Walla, Washington. This plant, one of the largest west of the Mississippi, uses *Texaco Capella Oil (Waxfree)* exclusively as compressor lubricant.



**THE  
TOUGH JOBS  
GO TO  
TEXACO**

**...AT BIRDS EYE,  
FOR EXAMPLE**

**A**t the Birds Eye Division of General Foods Corporation in Walla Walla, Washington, all refrigerating compressors have been Texaco-lubricated for years. Refrigeration Engineer C. C. Miller reports:

**"In a large plant like ours, dependable compressor performance is a must. Ever since we began using *Texaco Capella Oil (Waxfree)* we've enjoyed clean, trouble-free operation, top efficiency and low maintenance costs."**

The increased efficiency that leads to greater production and lower unit costs results wherever Texaco Lubricants and Lubrication Engineering Service go to work.

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